THE CONDOR

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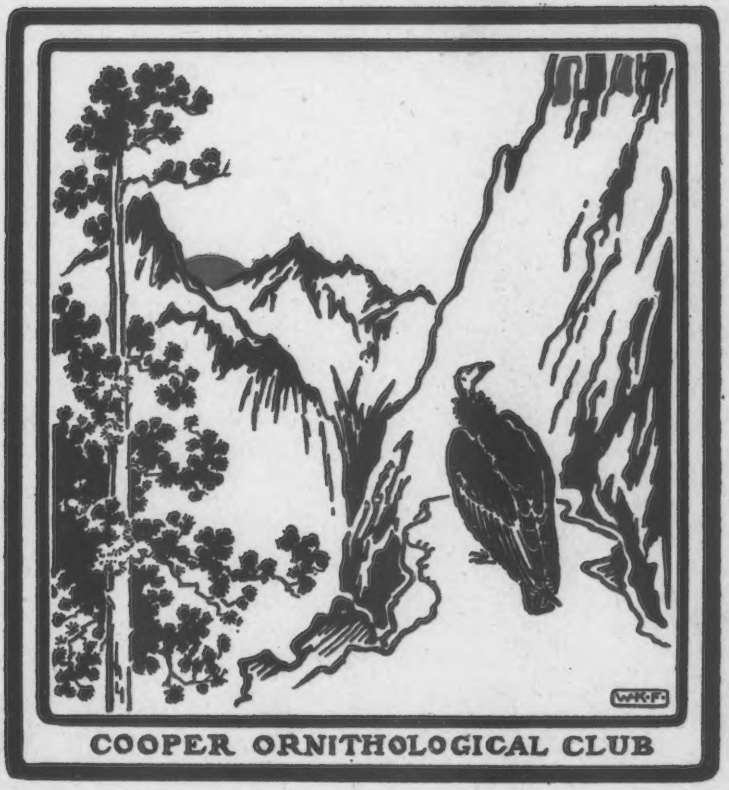

COOPER ORNITHOLOGICAL CLUB

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THE CONDOR
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Fig. 1. Surf-birds: A Blown Wing

From a Photograph, Copyright, 1913, by W. L. Dawson

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A GLIMPSE OF SURF-BIRDS

By WILLIAM LEON DAWSON

WITH SIX PHOTOS BY THE AUTHOR

WHAT we do *not* know about the Surf-bird (*Aphriza virgata*) would fill one of those dummy rows (entitled "The Complete Works of Xanedu") in a Wernicke bookcase. Disguise it as modestly as you will, if you have ever seen one you contrive to let your friends know of it the first day, and you fall to wondering the day after whether that Surf-bird story wouldn't bear repeating. Anyhow, I'd had my luck last fall, when three of a flock of five fell before our impulsive guns—better luck than I deserved, for while Howell exulted (really, you know, he yelled like a Comanche), I sat on the wet sand and hated myself for having used a gun instead of the camera—an unpardonable lapse into barbarism!

But coals of fire were heaped upon my head when on the 3rd of May last I thrust it cautiously over the crest of the beach bluff at La Patera, near Santa Barbara, California, and saw on a nearby reef, not a mere handful, but a large company of mingled shags and Surf-birds. The cormorants rose hurriedly and after them the Aphrizids, but the latter settled again while we accomplished a long detour which brought us up, panting, behind a line of rocks substantially on a level with our prizes. I snapped hurriedly at 150 feet, then set out more carefully to make a series of photographic approaches. First, I crept on hands and knees across the upper beach to a jutting rock which offered a little shelter; then advanced by slow stages in a direct line. What matter though the sand was wet and plastered here and there with blobs of crude oil! Were they not Surf-birds! Ever and again I snapped. At the sixty-foot range a jealous wave engulfed me as I squatted Turk-fashion upon the sands. No matter. It would not do to put the cause to hazard, by rising. "Snap" went the latch, and "roar" went the shut-

ter till the first relay of plates, carried in the game pocket of an old hunting coat, was exhausted.

Retracing my steps as cautiously as I had come, I secured another batch of

Fig. 2. SURF-BIRDS: THE FIRST EXPOSURE

plates and returned to the fray. This time I succeeded in reaching the reef itself and in lessening the distance to some forty feet—a score of Surf-birds at forty feet! They rose at length, for there were timorous souls among them, but they

Fig. 3. SURF-BIRDS IN FLIGHT; ONLY THE BLACK TURNSTONE REMAINS
From a photograph, copyright, 1913, by W. L. Dawson

returned or ever I had reached the base of supplies. After a hasty cold lunch of bread-and-butter, omelette and cake, all sugared impartially with fine sand, I resumed the quest, pausing only to note that the Surf-birds were themselves busily

engaged in feeding upon the white barnacles which covered the reef. These seemed to form their exclusive diet for the time; and it was interesting to see a bird get a good grip on a reluctant cirriped, then brace and haul him out by main force. It was yeoman service, and many a bill was smeared with bug juice, not to mention "biramous cirri" and other delicate crustacean apparatus.

Fig. 4. SURF-BIRDS: A SANDPIPER POSE
From a photograph, copyright, 1913, by W. L. Dawson

There were about twenty of the birds, twenty-three to be exact, and one Black Turnstone kept with them most of the time, although he might have found plenty of his own kind not far away. Once the Surf-birds deserted him and left him trembling on the rock; but I was unprepared to utilize the superb pose which his lonely plight presented a moment later, and he made off with startled cries.

Fig. 5. SURF-BIRDS: SHIFTING
From a photograph, copyright, 1913, by W. L. Dawson

As for the Surf-birds, as often as they were dislodged they retired to a strip of sand a few rods away and fell to gleaning like pipers.

On my last sally from the base of supplies I was determined to press advantage home. The gulls, who would fain have occupied the reef themselves, shrieked warnings when they saw me advancing upon the unsophisticated Surf-

birds. The latter gave attention indeed, but would not heed the repeated warnings. My advances had the effect of bringing all the flock together, whereas otherwise they would have scattered over the entire ledge of, say, a hundred feet length. Now and again the flock shifted, but always they came back, alighting at the extreme tip of the reef where the waves frequently bandied them. For the most part they fed silently, but as often as I made some unusual demonstration or as often as the wave swept about them, a murmur of complaint arose. The flock came to attention, or a few shifted position, if the water was actually too deep. But the moment danger was over, work was resumed upon the barnacles.

My last exposure, the last of twenty-one plates, was made at a distance of eighteen feet, and at that range only half of the flock would go on the plate. The exposure (f. 16, 1-140) was perfectly timed, and it marked, I am proud to confess, the most thrilling moment of a ten-year experience in bird photography.

Fig. 6. SURF-BIRDS: THE PARTING SHOT
From a photograph, copyright, 1913, by W. L. Dawson

CONCEALING AND REVEALING COLORATION OF ANIMALS*

By JUNIUS HENDERSON

CONCEALMENT is only one factor of safety and not always the most important factor. There are numerous others, such as the sharp hearing, keen scent and speed of deer and antelopes, the weapons and strength of elephants and tigers, the protective armor of turtles and armadillos, the shells of clams and oysters, the spines of sea urchins and porcupines, the offensive or irritative secretions or stench of certain invertebrates, which render concealment comparatively unimportant in many cases.

Natural selection means the survival, not of those forms which have a single advantageous character, but of those whose combined characters as a whole best fit them for existence in their natural environment, surrounded by their natural enemies. Hence the very popular supposition that under the doctrine of natural selection all animals must be concealingly colored, is unwarranted in theory and unsupported by the facts. If a given species be varying in the direction of concealing coloration and in no other direction, naturally those forms, or mutants, or whatever we wish to call them, whose colors are in closest harmony, would be

* Abstract of an address before the University of Colorado Scientific Society.

likely to survive, and the others to perish. Another species may be varying in the direction of revealing coloration, but at the same time developing some other element of safety which far outweighs the disadvantage of revealing coloration, and thus would survive. Most naturalists who have studied the two in the field will probably agree that the crow, whose color under most circumstances cannot be considered at all concealing, is, because of its intelligence, alertness and activity, quite as capable of escaping its natural enemies, armed only with natural weapons, as is the ptarmigan, which affords one of the best examples of concealing coloration.

The law of compensation runs all through nature, animate as well as inanimate, and cannot be ignored by naturalists. In the natural course of things, a more or less revealingly colored animal would be expected to develop its alertness, speed or some other factor of safety, to a greater extent than its better-concealed neighbor. In fact, this seems to be the actual result in certain familiar cases, though not at all in other instances, so far as we may judge. There is some reason for the supposition that reliance upon concealment in many cases enables an enemy to approach very closely before escape is attempted. Thus concealing coloration, reacting upon mental and physical activity, may possibly sometimes be an actual disadvantage, if its concealing effect be known to its possessor, of which we cannot very well be certain until we can persuade the animals to tell us.

It is possible, if not probable, that many other causes besides the need of concealment contribute to the coloration of animals. Mr. Beebe's experiments upon the direct effect of moisture, dryness, heat, cold, diet, etc., upon animal colors are well known and enlightening, whatever the final conclusions may be. Some other facts bearing upon this phase of the problem, generally known to professional zoologists, are often ignored, and may not be so well known to amateurs. For example: (a) The general possession of dark skins by tropical animals, which is not confined to tropical human beings and which is possibly not due merely to the direct blackening of the skin by the sun ("tanning"), but to pigmentation for protection of the living tissues from the destructive action of intense light, excessive heat, or both. (b) The difference between different colors in their power to radiate heat, which may require animals of different habitat to be differently colored without reference to concealment. Thus such colors would be protective, yet not concealing. "Protection" is a broader term than "concealment," and the two should not be used synonymously. (c) The difficulties found in attempting to introduce white-skinned animals (swine) into certain regions, which may be due to the deleterious effect of intense light. (d) The difference in the color of domestic horses under different climatic conditions, possibly due to temperature or light, or moisture, a matter now under investigation. Professor Chas. F. Woodruff has recently discussed this subject (*Science*, n. s., xxxv, April 12, 1912, pp. 591-593). The recent change of color of the linnet introduced into Hawaii may be due to some such cause.

If no animal were in need of concealment, it is probable that species would still differ in color and color pattern. Among the smaller animals many species differ minutely in color and color pattern, yet so slightly that the differences are scarcely discernible, except by direct comparison, with specimens in hand. These differences can hardly be for concealment. Sometimes colors are the result of refraction of light due to physical structure, as in pearls, opals and iridescent feathers of birds. Sometimes they are the result of chemical composition, as in rubies, emeralds, sandstones, limestones, etc. In the cases just mentioned, except

perhaps feathers, the colors serve no known useful purpose, so far as the inanimate possessor is concerned. Many vegetable colors are surely not for concealment, though some may be for protection from light or temperature, and in case of flowers, possibly for the purpose of attracting insects, which would mean revealing, not concealing, coloration. Many leaves are countershaded, but not for concealment, surely. Internal organs, muscles and tendons of animals differ in color, but certainly not for concealment from enemies. Are not the beautiful yellow and black abdominal colors of the ring-necked snakes (*Diadophis, spp.*), under almost all circumstances, concealed, not concealing? Many heavy shelled mollusks which lie buried in mud and have practically no enemies except parasites and boring mollusks, and certainly have no need of concealment, are strongly lined with different colors. The species differ in color, surely not for concealment, as in many cases the colors are most emphatically not concealing when the animal lies on the beach sands unburied. Compare also the inside of the pearly fresh-water mussels, some species with chocolate-colored nacre, some rose-colored and some pure white, surely none for concealment. Innumerable other examples will occur to naturalists.

If no animal were in need of concealment, if coloration were purely haphazard, it is possible or even likely that the majority of them would be in a large measure concealingly colored. There are more neutral or dull colors, than bright and conspicuous colors. While bright colors do not always mean conspicuousness, yet a very brightly colored animal is quite apt to be conspicuous under a great many circumstances, while a dull-colored one is quite apt to escape observation in almost any habitat, if it remains quiet.

In the varying colors, lights, shades, and details of form of a forest, a small animal of almost any color or color pattern easily escapes observation while quiet, not because it is concealingly colored, but because it is only one in the great mass of detail, and the eye *sees* but a few out of the thousands of details. A black crow, a white heron and a scarlet ibis, all fairly large birds, standing side by side, could escape observation under many circumstances. Furthermore, in forest and brush patches, animals are almost always partly concealed or their outlines broken up by intervening twigs, leaves, etc. Even then it is noticeable that many birds which are good examples of concealing coloration take the precaution to keep a tree or bush between them and their enemies, a fact probably familiar to every ornithologist.

It has been argued that if concealing coloration is quite general, then we are warranted in assuming that it is universal, and that the apparent exceptions are exceptions simply because we do not know all the facts. That argument is quite unsound, and the acceptance of the doctrine of evolution, recently offered as an illustration supporting the argument, is not only not strictly parallel, but not in any way or in the slightest degree parallel. Naturalists will generally agree that the American bison and muskox in their native haunts are not concealingly colored and have no need for concealment from natural enemies armed only with nature's weapons. They are vegetarians and well able to protect themselves, except as against the artificial weapons of the human race, especially the death-dealing rifles of modern civilization. The same is true of many other animals. If this be admitted, then it follows that even though three-fourths of all animals are to an astonishing degree concealingly colored, the remaining fourth might be revealingly colored, because fully able to take care of themselves and perpetuate their kind, because of greater fecundity, intelligence, activity, strength, or other protective character or device.

That there are almost innumerable cases of concealing coloration, in varying degrees of perfection, is so generally conceded that it needs no argument or citation of instances; and some species are so colored as to easily escape observation in such a great variety of situations as to make quite unnecessary the Messrs. Thayers' elaborate, interesting, and in the main perhaps correct, explanation of how different types of broken patterns are suited to different types of background. Difference of opinion is found only when we come to discuss certain definite species or to decide how nearly universal the phenomenon is.

That there are many cases of clearly revealing coloration (such as the bison above mentioned) is usually admitted, even by the most radical advocates of the other side of the problem, though often in their generalizations they use language which plainly contradicts their admissions of exceptions. Among animals which would apparently be as much benefitted by concealment as others, there are such numerous unexplained inconsistencies as may well cause one to hesitate about wholesale declarations. Many of the explanations offered utterly fail to explain. One must wonder if the assertion that white herons are concealingly colored because they are seen by their prey or their enemies against a white sky is at all satisfactory to anyone familiar with the range, habits and habitats of this and other herons. Is it not more often seen in solid white, outlined against a deep blue, leaden or gray sky, or a dark bank, or a solid bank of foliage? At any rate, before the white heron was exterminated over most of its former range, it was found, at least in many places, in the same habitat, and, so far as one may judge, with practically the same feeding habits, as the blue and green herons. Such instances as this, and they are quite numerous, should not be lightly passed over. It does not help matters to say that if we knew more of the intimate life relations of these animals we would find all to be concealingly colored, because that is a mere assertion.

Another large class of inconsistencies involves those species of which the male is radically different in color from the female. Forced explanations are not conducive to scientific progress. Taking the redwing as a much discussed example, it has been asserted that the male is concealingly colored because it is seen by its enemy, the hawk, from above, against the dark mud and dark foliage of its swampy habitat, and that the lighter wing-patch would be easily mistaken for a flower. Yet over a large part of its range (including, of course, the various slightly differentiated species and subspecies) during a large part of the year it finds no dark mud or dark foliage as a background. Species should be considered in relation to their whole range and to all other species and other elements of their environment. Even more difficult are those species of which the male is much like the female during part of the year, but wears more conspicuous colors during the nesting season. The theory that the conspicuous color is assumed in order that the male may attract the female is hardly satisfactory. The theory that the male is so colored in order to attract enemies from the nest may possibly have some weight, especially in view of the habit developed by other species of leading enemies from the nest by fluttering along the ground as if wounded. Such species as the bobolink and lark bunting, the males of which, more conspicuously colored, rise into the air and then sing as they glide downward as if purposely to attract attention to their alighting-place, afford a chance for observations of value on this point, if they have not been made, by noting in a great number of cases whether the bird glides down toward the nest or away from the nest. An objection to this theory is that many of the conspicuously colored males assist in feeding the young when hatched, and some, at least, habitually feed the female

on the nest. If the purpose of the difference between male and female is to lead enemies from the nest it would be a protective device, but certainly not a case of concealing coloration, so far as the male is concerned. The doctrines of warning colors, and mimicry, besides the lack of convincing evidence of their validity, appear to admit that all color patterns are not concealing.

Another set of inconsistencies includes the croaks of frogs, the songs of birds and the cries of mammals. Why should nature provide concealing colors for a pika, a woodchuck, or a prairie-dog, and then endow it with an instinct which induces it to attract the attention of every enemy which approaches? Everyone who has studied nature in the field must know that a large percentage of birds and mammals which are observed, either by man or by lower animals, would escape observation, if, to use the vernacular, they "had sense enough to keep their mouths shut" and remain motionless. These cries, croaks and songs are not for the purpose of leading enemies away from nests or young, because they are not confined to one sex or to the breeding season.

To take care of the seeming exceptions to the concealing coloration doctrine it has been boldly asserted that "all patterns and colors, upon all animals whatsoever, except such as live in the dark, or are neither predatory nor preyed upon, are, when seen against the background against which their enemy (or prey) would see them at the critical moment, inexpressibly perfect pictures of the background, and therefore obliteratively colored." The circumstances of the critical moments of most species vary so enormously, and such moments occur in varying circumstances so often with some species, that it is difficult to conceive how anyone at all familiar with nature could indulge in such a statement. It is quite on a level with another assertion of the same author, that "one may read on an animal's coat the main facts of his habits and habitat, without ever seeing him in his home." As the crow's color does not change, does it display "a perfect picture of the background" when the critical moment occurs in a cornfield, or in a cottonwood tree, or on the rock crags of the Rabbit Ears, or when the ground is bare, or when it is white with snow? If it be suggested that it is when on the nest, the obvious answer is that the nesting sites vary greatly, and surely that suggestion could not apply to the same query concerning the male of the redwing, or any species whose male takes no part in nest building or brooding. A moment's thought must flood the mind of every zoologist with specific objections to the assertions above quoted.

The critical moment theory has been particularly applied to those animals which have white rump patches or white tails, or both. I have been familiar with the prong-horn antelope since 1883 and with the rabbits for a much longer period, and have never seen either dog or coyote puzzled for a second by the fact that the posterior white parts were thrown against a sky and so obliterated. During the past two seasons I have had more opportunities to watch dogs pursue cottontails and jackrabbits than ever before, and they followed unerringly, often at close range, up hill where the rabbits were almost constantly against the sky. In case of the antelope, it is, so far as my observation goes, usually the flashing of the white patch that attracts the attention of its enemy, whether man or beast. It is inconceivable that nature has provided it with such a distinctive advertising character, to attract the attention of all the coyotes in the vicinity, merely in order that it might sometimes be seen against a white sky and thus throw the enemy off the trail, even if we can presume that the animal's enemies pursue their prey entirely by sight. My own observation is that most of our forest rabbits are not seen usually against a sky background, or even a forest background with

patches of sky showing through, but much more often against a solid dark background of canyon wall, river bank or solid green foliage. Of course this proves nothing, unless it coincides with the observations of others made with this particular question in mind. Even in a level, treeless region, during the past season, I could not see that the low bounds of a cottontail ever carried its rump high enough to bring it to the sky line, from the standpoint of a coyote, except for a fraction of a second at a time. Furthermore, the chief enemies of the rabbit, in many localities, are not mammals, but large birds of prey, which surely do not often see their quarry against white skies. This is also true of the white-tailed prairie-dogs of the intermountain region of Colorado. Whatever their purpose, that such white posterior markings are obliterative from the standpoint of the possessor's enemies is altogether too doubtful to be accepted without thorough testing on many species. Mr. Thayer's photographs do not show the animals in the position in which they would usually be seen by their enemies at the "critical moment," in my judgment.

Thayer's theory of countershading seems correct as an optical principle, but needs to be studied from many angles before acceptance as a part of the concealing coloration theory. Many animals which are rendered quite indistinct in the middle of the day, when the light comes from above, are not so indistinct earlier and later in the day. Thayer himself admits this, apparently, in the case of the jacanas. I have found it true with the cottontails of the western plains during the past summer. As many countershaded animals are in hiding during the hours when the countershading would be most effective for concealment, and moving about when it is least effective and in some instances even disadvantageous, it is well to look for some other explanation of the phenomenon and not to hastily assume that its purpose is concealment.

Thayer's ruptive design theory is possibly one of the most important ones he has advanced. In certain environments, at any rate, the breaking up of the outlines of animals in the way suggested is a most effective method of obliteration.

Nearly all the discussion of concealing coloration has assumed that all animals have the same powers of vision as man, see things just as man does, and at least one prominent author has expressly declared this to be true. Nothing could be farther from the probability. All men, even, have not equal visual powers. Aside from individual color blindness, there is strong evidence indicating that it is a racial character of some primitive peoples (*Science*, n. s., XXII, 1905, p. 680), thus reviving the old theory that in the development of color perception the colors at the long-wave end of the spectrum were first perceived, and that only a few animals have yet reached the higher colors. Birds probably have color vision, though very little is yet known of its extent or universality. Experiments under proper control up to the present time indicate that many of the mammals have not color vision, but only the power of distinguishing between brightness and dullness. Such experiments, to be of any value whatever, are very difficult. There are reasons for the belief that amphibians and reptiles have only motion vision, which, if true, would nullify the numerous statements about such animals being unable to see their enemies on account of concealing coloration. It is quite certain that all animals are more apt to see any object in motion than a motionless one. It is also doubtful whether any animal except the primates has binocular vision, a matter of very great importance. It is generally believed to represent the difference between an ordinary flat photograph and a stereoscopic view, which brings the scene out into sharp relief. Anyhow, binocular vision is one of the important factors in the perception of solidity, rotundity, etc. Whether the

lower animals have developed some other faculties as substitutes for color vision and binocular vision is not yet determined. Experimentation, properly controlled, along these lines, is difficult, but if the matter of concealing coloration is ever to be settled, naturalists must begin to pay more attention to the work of the experimental psychologists, testing the results of their experiments, wherever possible, by field observations. Until there is some reason for thinking that coloration is necessary for the concealment of animals from their enemies, or that coloration would be effectual for that purpose, the doctrine, in view of all the apparent exceptions and inconsistencies, stands on rather insecure ground. There is no reason for assuming that animals in their natural habitat appear to other animals as they appear to man.

Finally, the camera does not represent animals in their habitat as they appear to man, both on account of the lack of color and relief, and great reduction of scale in order to show habitat. Stereoscopic views would correct the latter, if it were economically practical to publish them, but color photography has not yet developed far enough for general use in the field. It is fairly safe to say that no photograph has yet been published which exhibited the animal as clearly as it was visible to the human eye. Some authors have frankly acknowledged this in discussing concealing coloration, but others have said the opposite. Especially reprehensible is the indulgence in taking photographs out of focus in order to obscure outlines and patterns, ignoring scale and perpective in paintings and drawings, and placing objects in front of one figure to obscure it in order to show that it is concealingly colored, and omitting the objects from before another figure to show that it is not, all of which have been practiced in advocacy of the concealing coloration doctrine.

SWALLOWS AND BED-BUGS

By EDWARD R. WARREN

IN MY paper in the May-June CONDOR, 1912, entitled "Some North-central Colorado Bird Notes," I referred to the belief that swallows harbor bed-bugs as ridiculous; and now I have to confess that possibly I did not know as much as I thought I did, a not uncommon failing with us all. Some time after the paper was published, W. Leon Dawson in a very courteous letter, called my attention to the fact that he had found Cliff Swallows' nests badly infested with bed-bugs, in one case so much so that the colony had been deserted. He reported this in "The Birds of Washington," page 333. This started me to looking into the matter, something I had not done before, and as it would seem that not very many are posted on the subject, and in fact but little definite has been published that I have been able to find, I have thought it worth while to write up what little I have been able to learn about the matter, together with a few observations of my own, in the hope that it may be the means of bringing out further information. Certainly ornithologists should do their part in ascertaining whether or not swallows are guilty of bringing such disagreeable pests into human habitations.

I found that a bug (*Acanthia hirundinis*), belonging to the same genus as the true bed-bug (*Acanthia lectularia*), is parasitic on swallows, pigeons, chickens, and bats. It should perhaps be stated that the French authority, L. Gedoelst, places it in another genus because of certain structural differences,

calling it *Oeciacus hirundinis*. On writing Dr. L. O. Howard, Chief of the Bureau of Entomology, Department of Agriculture, for information, he gave me a reference to a record by Otto Lugger, State Entomologist of Minnesota, and published in the Sixth Annual Report of the Entomologist of the State Experiment Station of the University of Minnesota, 1900, page 52. This is as follows:

"Bugs, very similar to bed bugs, attack pigeons, chickens, swallows and bats. Those found in the nests of swallows not infrequently reach the inside of houses against which these beneficial birds have built their clay nests. Such bugs very closely resemble the genuine bed-bugs, yet are different when studied in detail; they are much smaller, darker, and cannot exist for any length of time away from their proper home, the nest of the swallow, where they are sometimes exceedingly numerous. * * *

"Since the above account was written [this having been copied from a previous report], another species of true bed-bug was found in a large school building in the western part of the state [Minnesota]. Here these insects became very annoying during winter, and especially near the warm steam-pipes; later they invaded all the rooms. It is a strange fact that an insect, usually dormant at that time, and certainly not active during the day, should so change its habits as to become a veritable trouble in midwinter, annoying students and teachers in broad daylight. This species is much smaller, and resembles the one found in swallow nests so closely that it may be identical with it."

It will be noted that this quotation does not say positively that these insects were the swallow bed-bug, nor is it stated if there had been swallows' nests on school building. However that may be, it is evident that the insects were not the common bed-bug.

Gedoelst, the author previously referred to, says concerning the swallow bug: "Lives in the nests of swallows; may enter houses and attack man."*

As for myself, the only evidence I can offer is of a negative character. In the summer of 1902 there were about thirty Cliff Swallows' nests under the eaves of a one-story log house on the ranch of a friend near Crested Butte, Colorado. I frequently spent the night at the ranch, sleeping in this house, and on the same side as where the nests were, and was never disturbed by any insects. Another man slept there all the time, and never made any complaints. The cabin was built of dry aspen logs, full of cracks and crevices which would have harbored the parasites if they had been about. About this same time I occupied office and sleeping rooms in the town of Crested Butte in a building on which Cliff Swallows had nested, and had no trouble there.

A lady living on another ranch near Crested Butte told me of having a few years previously destroyed the Cliff Swallows' nests on the ranch house because of the dirt they made about the house, and regretted having to do it for the reason that the birds had been very useful in keeping down the mosquitos, which were a pest in the irrigating season. She spoke of the birds having begun to return and build about the barns, and expressed her pleasure at that. I think that if she had thought the swallows guilty of having brought pests into her house she would have spoken of it to me.

Of course it is not impossible that these colonies may not have been troubled with the parasite, and even that it does not occur at that altitude, 9,000 feet, but —its relative does. Not knowing of them at the time I did not look for them.

*Synopsis de Parasitologie de l'Homme et des Animaux Domestiques. Par. L. Gedoelst. Bruxelles. 1911.

but I did take down, after the builders had left, some of the nests from the cabin for examination and photography, and noted no parasites of any sort.

Most animal parasites will not live for any length of time on any host other than the natural one, though some have several hosts, and a few seem quite indifferent in such matters. What the case is with the swallow bed-bug I do not know. I would suggest to my readers that in such cases as may come to their notice they secure specimens of the bugs and submit them to an expert for identification. Certainly the matter will bear further investigation. Incidentally I may remark that it is worth while to collect any parasites one may find on any animal and turn them over to some one interested in these things. I have made it a point lately to always have a few vials containing weak alcohol with me when collecting, and putting into them the parasites which often immediately show on a dead animal, with a label to show from what species they were taken.

I must express my appreciation of Mr. Dawson's courtesy in writing me about the matter instead of correcting me in the CONDOR, which he would have been justified in doing under the circumstances as known to him. As it happens, in a way we were both right and both wrong, so we should both be satisfied.

NOTES ON SOME FRESNO COUNTY BIRDS

By JOHN G. TYLER

Recurvirostra americana. Avocet.

IN PURSUING ornithological studies the bird student is often led to wonder what strange economy of Nature causes certain species to choose an environment that, from a human standpoint, would seem unsuited to a creature of gentle disposition and attractive plumage.

Several miles southwest of Caruthers, Fresno County, California, are a number of shallow ponds of greater or less extent, according to the amount of winter rainfall, and all but two of them possessed of a freakish tendency to become entirely dry at times, only to fill up again without warning. Surrounded by salt-grass knolls, their borders entirely devoid of vegetation of any kind, these ponds are not the most picturesque places in the valley. especially in view of the fact that the water is alkaline and in summer often becomes stagnant. A more foul-smelling, unattractive place could hardly be found, yet these ponds are resorted to each spring by a company of Avocets that remains throughout the summer. It is evidently a matter of choice rather than necessity with these handsome waders, too, for there are numerous overflowed pastures and permanent ponds in other parts of the valley, each of which claims its nesting colony of Stilts every spring; but while a few of the latter may ofttimes be found with their larger cousins, yet I have never found the Avocets elsewhere than in the immediate vicinity of the most sterile sinks.

When the water in these ponds is subjected to the rays of the summer sun, a slimy, jelly-like substance appears around the edges and attracts myriads of flies, which often form an unbroken black band four feet or more in width and completely encircling the ponds. Is it not possible that these flies are one of the staple articles of food with the big waders? Possibly this is the solution of their attachment to these uninviting ponds. A similar assemblage of flies has been previously noted by Walter K. Fisher (CONDOR, IV, 1902, p. 9) as occurring at Mono Lake.

Lophortyx californica vallicola. Valley Quail.

The quail began nesting early this year (1912) but for some reason not a single brood of young was seen until the fifteenth day of July, when a mother quail was observed making frantic efforts to lead an inquisitive ornithologist away from her tiny chicks, out of the nest but a few hours. From that date all through the following month, broods of various sizes were noted daily, and as late as the first week in September many of the young birds seen were not over half grown. There is no reason to doubt that these were all the result of second sets of eggs, but I am at a loss to account for the entire absence of young quail during May and June.

That many sets of eggs were deposited during April and May was evidenced by the finding of several nests. On April 20 a nest was seen in a vineyard, built in a clump of pepper grass two feet from the base of a vine. There were eighteen eggs in which incubation was probably at least begun. It was a most unfortunate choice of location, and it is extremely unlikely that the nest survived the cross plowing of the vineyard, which probably took place soon afterward.

Another nest, accidentally discovered on May 12, and also holding eighteen eggs, was several inches under water. The nest was built in a tussock of wire grass just at the edge of a canal, and a sudden rise of water had completely inundated it. The eggs when found had been soaking for some time, as they were entirely unmarked on the upper side, only that portion of the shell that rested on the nest bottom showing traces of the coloring pigment. As it is rather a difficult task to remove the coloring from a heavily incubated quail's egg I have assumed that this set was fresh, or nearly so, at the time it was abandoned. Again, on May 16, a nest with ten fresh eggs was exposed when a young man hoeing weeds in a vineyard uprooted a thick cluster of green foxtail grass.

While the foregoing records might seem to offer a solution to the question of why the first broods of quail failed to appear, yet it is not reasonable to conclude that a similar disaster overtook all of the early nests, as the percentage of losses from unfortunate selection of nesting sites was probably no greater than in former years. Fortunately our quail are wonderfully prolific, and the number of birds found in the vineyards when the shooting season opened was not noticeably less than in past seasons.

Asio wilsonianus. Long-eared Owl.

Probably on account of the absence of timber in the vicinity of Fresno, this species is seldom seen. The San Joaquin River bottom affords concealment and hunting grounds for a few individuals; but in twelve years residence in this county I had never found a nest of the Long-eared Owl until April 30 of this year. On that date I was making my way along an old slough which, on account of the slight rainfall of the previous winter, was carrying no water. In former years I had encountered there many patches of rank-growing nettles, which afforded ideal nesting sites for numerous colonies of Tri-colored Blackbirds. Several clumps of willow bushes, with a few larger trees, were scattered along the banks, and on this particular occasion I had hopes of finding a pair of Swainson Hawks nesting in one of the larger willows.

With a bird crank's curiosity I was peering into all the more dense portions of the screen of foliage, when I noticed a suspicious-looking bunch of feathers sitting upright on a dead branch not far away. A second glance showed that I had found a Long-eared Owl. I was convinced that its nest was near

by, and so it proved, for scarce sixty feet distant, in a small isolated tree, I came upon a bundle of sticks placed at the junction of a large branch, in a somewhat exposed position, and only ten feet from the ground. As the tree was on low ground I could almost see into the nest by standing on the bank of the slough. When I looked into it and saw six eggs, I felt that one more species was to be added to my collection of local sets; but a more careful examination showed that two of the eggs were on the point of hatching, one already having a small hole chipped in one side; so sliding from the tree I made a hasty departure leaving the owls to return to their soon-to-be family.

Yes! I have read instructions as to satisfactory methods of preparing for the cabinet eggs in which incubation is complete, but the collecting spirit has never become sufficiently developed to tempt me to pilfer a nest in that condition. Next season, perhaps, I may happen along that way a couple of weeks earlier, and should a good set of eggs be my reward I shall prize them more highly when I remember my previous acquaintance with the Long-eared Owls.

Speotyto cunicularia hypogaea. Burrowing Owl.

Wishing to acquire a little more information as to the nidification of these queer little owls, I opened four nesting burrows on April 30, 1912; the first of these held six fresh eggs, with one of the birds on the nest. She proved a savage captive, lying on her back with bill snapping viciously and claws extended while she squealed and scolded in the most approved owl fashion. Not wishing to injure or unnecessarily frighten her I soon released her. After a short undulating flight she perched on the mound of a burrow not far away, where she remained for some time. One of the other nests held large young birds, nearly feathered, while the other two burrows each claimed families of half-grown young. The number of each brood was not ascertained as I did not care to enlarge the burrows to such an extent as to allow the entrance of any large animal.

Around the mounds at the entrances to these excavations were miscellaneous collections of scraps, showing the kind of food that had been brought to the young owlets. A dried up section of some small snake, the legs of a frog, tufts of fur and bones of mice, were identified, together with large numbers of wings and shells of beetles. These, and other large insects, it seemed, had formed the greater part of the food of newly hatched birds, the diet of meat gradually becoming more common as the young grew stronger. From the standpoint of the agriculturist a pair of these interesting little owls must prove a valuable asset to any farm.

Lanius ludovicianus gambeli. California Shrike.

Last spring, while passing a willow tree growing near a canal at the roadside, I noticed a shrike perched on the topmost twig. As this is usually an indication of a nest, I stopped to investigate, and soon located the framework of a nest that had probably been commenced only a day or two before my visit. Three weeks later (March 23, 1912) I found myself in the same locality, and decided to look up my shrikes; but before reaching the place I saw another nest in the drooping branches of a tree not over one hundred yards from the site of the first one mentioned. Seeing the tail of the sitting bird over the edge of the nest, I supposed my shrikes had moved for some reason; so, after the owner had flitted from her nest and skimmed along to a convenient weed stalk, I examined the contents and was rewarded with eight nearly fresh eggs. As this was

the second set of that number that I had ever found, they were added to my collection. Going on to where the first nest had been located I expected to see the tree deserted, but was surprised to find that while the nest had never been completed another had been built on a different branch, but a few feet away and a little higher up. The bird was on in this case also, and I climbed up about fifteen feet to find seven eggs in the deeply cupped nest. Less than a quarter of a mile away in a thick bush, four feet from the ground, was another nest of this species with four fresh eggs. Surely this must have been a very attractive place for grasshoppers, small lizards, beetles and horned toads, for I had never before known three pairs of shrikes to nest in such a small area.

Planesticus migratorius propinquus. Western Robin.

Having read from time to time of several sets of five eggs of the robin having been found, I thought it might be of interest to record a set of that number which I came across four years ago. On May 22, 1908, while driving along a mountain road near Ockenden, Fresno County, California, I noticed a nearly completed robin's nest situated nine feet from the ground, in a niche in an old burnt stub standing not four feet from the edge of the narrow road. The nest was composed largely of gray-green tree moss, and the mud cup was lined with fine, dry grass stems. Coming down the mountain seven days later, I had forgotten the nest on the stub until I happened to see the tail of a sitting bird on the nest. She had already begun to incubate a set of five eggs that were altogether normal in size, shape, and coloration.

During the week that was spent in the mountains I examined about thirty nests of this species, containing either eggs or young, and sets of three were more common than four; so that five eggs in one nest was quite exceptional, for that year at least.

BIRD NOTES FROM THE COAST OF NORTHERN LOWER CALIFORNIA

By GEORGE WILLETT

APRIL 4, 1912, the writer left San Diego on the launch "Flier," George H. Child, captain, for a short cruise along the coast of Northern Lower California and to some of the adjacent islands. Among those composing the party were W. J. McCloskey of the Los Angeles County Museum of History, Science and Art, C. B. Linton of the Cooper Club, and H. C. Lowe, conchologist. We reached Ensenada April 5, and, after procuring the necessary papers from the authorities there, started down the coast. Our trip lasted twenty-two days, ending at San Diego, April 26. We were very unfortunate as to weather, only one or two days of the entire time being pleasant. The inclemency of the elements, of course, retarded us to a great extent in our ornithological pursuits. We managed, however, to secure quite a number of specimens and notes.

More or less collecting was done at each of the following points on the dates given. Todos Santos Island, sixty-five miles south of San Diego, five hours on April 25; Hole in the Wall, ten miles southeast of Todos Santos, afternoon of April 5; Santo Tomas Anchorage, eighty miles south of San Diego, April 6; Colnett Bay, one hundred and thirty miles south of San Diego, April 7 and 8; San Quentin Bay, one hundred and seventy-five miles south of San

Diego, April 12; San Martin Island, one hundred and sixty-five miles south of San Diego, April 9, 10, 11 and 23; San Geronimo Island, two hundred and twenty miles south of San Diego, April 13 and 14; and Cerros Island (south end), three hundred and sixty miles south of San Diego, April 15 to 21, inclusive.

The following is a list of species noted on the trip. All notes and records of specimens taken are provided by the writer personally unless otherwise stated.

AEchmophorus occidentalis. Western Grebe, Common in flocks at Colnett Bay, April 7 and 8. None observed there on our return April 24.

Colymbus nigricollis californicus. Eared Grebe. Several seen and one taken at Colnett, April 8.

Gavia immer. Loon. One bird in fine spring plumage noted in San Diego Bay April 4; another seen in the same locality April 26.

Gavia pacifica. Pacific Loon. Common at all points south to San Quentin Bay. Many seen migrating northward. Much less plentiful on our return journey.

Ptychoramphus aleuticus. Cassin Auklet. Breeding in small numbers on Todos Santos and Cerros, and in an immense colony on San Geronimo. It was hardly possible to walk anywhere on the latter island without sinking knee deep into auklet burrows. In rocky portions of the island the birds were nesting in crevices in the rocks. Most of the nests contained incubated eggs on April 14, but a few fresh eggs and two downy young were found. Of thirty incubating birds taken on the afternoon of the 14th, eighteen were females and twelve were males.

Brachyramphus hypoleucus. Xantus Murrelet. Fairly common on the ocean, but not found breeding although particularly sought for.

Larus occidentalis. Western Gull. Abundant everywhere we went. Not yet nesting.

Larus argentatus. Herring Gull. **Larus californicus.** California Gull. One bird of each species seen in San Diego Bay April 4.

Larus heermanni. Heermann Gull. One seen at Santo Tomas April 7, and another at San Martin Island, April 9. Several seen in San Quentin Bay April 12, and at San Geronimo Island April 14. Not plentiful, the majority evidently having passed southward to the breeding grounds previous to this date.

Larus philadelphia. Bonaparte Gull. Seen in San Diego Bay April 4.

Sterna maxima. Royal Tern. Abundant everywhere we went. Adult birds in fine plumage. Although we took specimens in several different localities, hoping to find *Sterna elegans,* we were unsuccessful.

Fulmarus glacialis glupischa. Pacific Fulmar. One bird in light plumage seen outside the entrance to San Diego Bay April 26; one found dead on the beach at San Geronimo Island April 14.

Puffinus opisthomelas. Black-vented Shearwater. Abundant on the ocean until about April 15; much less plentiful after that date, probably having passed southward to their breeding grounds.

Puffinus griseus. Sooty Shearwater. Common on the ocean during the entire trip.

Phalacrocorax dilophus albociliatus. Farallon Cormorant. Common as far south as we went. Nest-building on Todos Santos Island April 25. A great part of San Martin Island was covered with nests of this species. They were built on the tops of low bushes and none were occupied April 10-11.

Phalacrocorax penicillatus. Brandt Cormorant. Abundant on all the islands

visited. Not so plentiful as the last on Todos Santos and San Martin, but much more plentiful on San Geronimo and Cerros. A few fresh eggs noted on San Geronimo April 13.

Phalacrocorax pelagicus resplendens. Baird Cormorant. Fairly common on the ocean as far south as Cape Colnett, where several were seen April 7.

Pelecanus californicus. California Brown Pelican. Plentiful everywhere we went. Apparently not yet nesting. Old nests were seen on Todos Santos and San Martin islands. On the former island last year's egg shells were scattered everywhere, evidently the work of rats, with which the island is infested.

Mergus serrator. Red-breasted Merganser. Fairly common at San Geronimo Island April 14; one adult male in high plumage taken. One bird seen at the south end of Cerros Island April 17.

Chaulelasmus streperus. Gadwall. Adult female taken at Colnett April 8.

Mareca americana. Baldpate. One taken at Colnett April 8.

Querquedula cyanoptera. Cinnamon Teal. Common at Colnett April 7-8. One taken at Santo Tomas April 6.

Spatula clypeata. Shoveller. Common at Colnett April 7-8. On the morning of April 13, thousands of ducks were seen flying from the San Quentin marshes out to sea. They were so far away, however, that it was impossible to identify the different species.

Marila affinis. Lesser Scaup Duck. Common at San Diego Bay April 4, and at San Martin Island April 10 to 12, and 23.

Oidemia perspicillata. Surf Scoter. Common at all times on the ocean; adult males predominating.

Erismatura jamaicensis. Ruddy Duck. One taken at Colnett April 8.

Branta nigricans. Black Brant. Common in small flocks at Colnett Bay April 7; at San Geronimo Island April 13-14, and at Cerros Island April 16-17. An immature bird taken at the southern end of Cerros April 17 was much emaciated, and upon dissection was found to be literally alive with large tape worms.

Dendrocygna bicolor. Fulvous Tree-duck. Several seen at Colnett April 7-8.

Ardea herodias. Great Blue Heron. Seen occasionally during the entire trip. A small nesting colony noted on San Martin Island. April 9 the birds were at the nests but no eggs had been laid.

Porzana carolina. Sora. One taken and several others seen at Colnett April 8.

Fulica americana. Coot. Noted at Colnett April 8.

Phalaropus fulicarius. Red Phalarope. One bird seen near Todos Santos Island April 25.

Gallinago delicata. Wilson Snipe. Noted by McCloskey at Colnett April 8.

Pisobia minutilla. Least Sandpiper. Common at Colnett, and on San Martin and San Geronimo islands.

Limosa fedoa. Marbled Godwit. One taken by Linton at San Martin Island April 10.

Totanus melanoleucus. Greater Yellow-legs. One taken by Child at Colnett April 7.

Heteractitis incanus. Wandering Tattler. Fairly plentiful everywhere on rocky shores. Several specimens taken at Cerros Island April 17-18 were in fine spring plumage.

Actitis macularius. Spotted Sandpiper. Seen occasionally on rocky shores. One specimen taken at Cerros Island April 18.

Numenius hudsonicus. Hudsonian Curlew. Common at San Geronimo Island April 13-14, and at China Point (about thirty miles south of Todos Santos Island), April 25.

Squatarola squatarola. Black-bellied Plover. Common at San Geronimo Island April 13-14.

AEgialitis nivosa. Snowy Plover. Common at San Geronimo Island April 13-14.

Aphriza virgata. Surf-bird. Female taken by Linton at San Geronimo Island April 13; another female taken by Child the same day.

Arenaria interpres morinella. Ruddy Turnstone. Common at San Geronimo Island April 13-14. Several specimens taken.

Arenaria melanocephala. Black Turnstone. Abundant everywhere on rocky shores. Many in almost full summer plumage.

Haematopus frazari. Frazar Oyster-catcher. Fairly common on Cerros Island; one taken by Linton on San Geronimo.

Haematopus bachmani. Black Oyster-catcher. Common on all the islands visited; also seen on the rocky shores of the mainland. On Cerros Island there are very few oyster-catchers typical of either this or the last species, most of them showing hybridization between the two forms. A male and female, evidently paired, were taken April 16. The male was almost typical *frazari* and the female almost typical *bachmani.*

Lophortyx californica vallicola. Valley Quail. Common on the mainland.

Zenaidura macroura marginella. Western Mourning Dove. Seen at Colnett.

Cathartes aura septentrionalis. Turkey Vulture. Common on the mainland, and on San Martin and Cerros islands.

Circus hudsonius. Marsh Hawk. A pair seen at Colnett, and another pair on San Martin Island.

Haliaeetus leucocephalus leucocephalus. Bald Eagle. One or two birds seen at north end of Cerros Island.

Falco peregrinus anatum. Duck Hawk. Male taken on San Martin Island April 10. Male, female and three badly incubated eggs taken on San Geronimo Island April 13. Several birds seen on Cerros Island.

Falco sparverius phalaena. Desert Sparrow Hawk. Seen on the mainland.

Pandion haliaetus carolinensis. American Osprey. One pair seen on San Geronimo; breeding abundantly on San Martin and Cerros. A few sets were secured, but nearly all the nests examined contained young. Some young birds found April 9 were at least six weeks old, so the eggs must have been laid in January. An addled egg, taken from a nest which also contained two young, measures 2.86 x 1.93, by far the largest Osprey's egg I have ever seen. At the time of our visit the Ospreys seemed to be feeding almost altogether on flying fish, which were very plentiful around the islands.

Aluco pratincola. Barn Owl. Seen by McCloskey at Colnett, and by Child on San Martin Island.

Speotyto cunicularia hypogaea. Burrowing Owl. One seen by Lowe on San Geronimo Island April 14.

Ceryle alcyon. Belted Kingfisher. Male taken by Child at Santo Tomas, and female of a pair seen, taken by the writer at San Martin Island April 23. One bird seen at San Geronimo Island April 14, and another at the south end of Cerros Island April 17.

Aeronautes melanoleucus. White-throated Swift. Several seen at Todos Santos Island April 25.

Calypte costae. Costa Hummingbird. Common on the mainland; fairly common on Todos Santos and Cerros islands.

Calypte anna. Anna Hummingbird. Common on the mainland.

Tyrannus vociferans. Cassin Kingbird. Common on the mainland.

Sayornis sayus. Say Phoebe. Common on the mainland; also seen on San Geronimo and Cerros islands.

Sayornis nigricans. Black Phoebe. Seen at Colnett.

Myiochanes richardsoni richardsoni. Western Wood Pewee. One seen at Colnett April 8.

Empidonax difficilis difficilis. Western Flycatcher. One taken at Hole in the Wall April 5.

Corvus corax sinuatus. American Raven. Common on the mainland and on all the islands visited. A nest examined on San Geronimo Island April 14 contained newly hatched young. An adult bird taken on Cerros Island measures: length, 25.38 inches; wing, 17.38 inches.

Agelaius phoeniceus neutralis. San Diego Red-wing. Common at Colnett.

Sturnella neglecta. Western Meadowlark. Common at Colnett.

Carpodacus mexicanus frontalis. House Finch. Common on the mainland.

Carpodacus mexicanus clementis. San Clemente House Finch. Common on Todos Santos Island. No specimens taken. I have placed the Todos Santos Island bird under this form on the authority of the A. O. U. *Check-List,* I found no house finches on any of the other islands visited.

Astragalinus psaltria hesperophilus. Green-backed Goldfinch. Fairly common on Todos Santos Island April 25.

Passerculus beldingi. Belding Sparrow. Abundant in Colnett marshes.

Zonotrichia leucophrys gambeli. Gambel Sparrow. Abundant at Colnett April 7-8; common on San Martin Island April 9-11, and on Todos Santos Island April 25.

Spizella passerina arizonae. Western Chipping Sparrow. Fairly common on north end of Cerros Island.

Amphispiza bilineata deserticola. Desert Sparrow. Rather common in low bushes on north end of Cerros Island. An adult male taken April 21 proved to be a breeding bird.

Amphispiza belli. Bell Sparrow. Abundant on San Martin Island. Beginning to breed April 23.

Aimophila ruficeps ruficeps. Rufous-crowned Sparrow. This bird was more plentiful in the hills near Point Banda, below Ensenada, than I have ever seen it anywhere else. It was not noted in any other locality.

Melospiza melodia cooperi. San Diego Song Sparrow. Common at Colnett.

Pipilo crissalis senicula. Anthony Towhee. Common at Colnett.

Passerina amoena. Lazuli Bunting. One seen on Todos Santos Island April 25; male found dead by McCloskey at Colnett April 8.

Piranga ludoviciana. Western Tanager. Several tanagers seen on Cerros Island were probably of this species. They were very wild and no specimens were obtained.

Petrochelidon lunifrons lunifrons. Cliff Swallow. Common at Colnett.

Hirundo erythrogastra. Barn Swallow. Several seen at San Martin Island April 23.

Iridoprocne bicolor. Tree Swallow. One seen at Colnett April 8.

Tachycineta thalassina lepida. Northern Violet-green Swallow. Common at Colnett April 8.

Vermivora celata celata. Orange-crowned Warbler. Male taken at Hole in the Wall April 5. Others, apparently of the same species, were seen at the same time and place.

Vermivora celata lutescens. Lutescent Warbler. Fairly common at Colnett April 8. One specimen taken.

Vermivora celata sordida. Dusky Warbler. Fairly common on Todos Santos Island April 25.

Dendroica auduboni. Audubon Warbler. Common at Colnett April 7-8.

Geothlypis trichas arizela. Pacific Yellow-throat. Common at Colnett April 7-8.

Anthus rubescens. Pipit. Fairly common at Colnett April 8.

Mimus polyglottos leucopterus. Western Mockingbird. Common at Colnett, and fairly common at the north end of Cerros Island. In the latter locality they were very wild and we were unable to secure any specimens.

Toxostoma redivivum. California Thrasher. Common at Colnett.

Salpinctes obsoletus obsoletus. Rock Wren. Common on the mainland and on all the islands except San Geronimo. Not noted on the latter island.

Psaltriparus minimus californicus. California Bush-Tit.

Chamaea fasciata henshawi. Pallid Wren-Tit.

Polioptila caerulea obscura. Western Gnatcatcher. The above three species were common on the mainland.

Polioptila californica. Black-tailed Gnatcatcher. Abundant on the mainland.

THE OUTLOOK FOR CONSERVING THE BAND-TAILED PIGEON AS A GAME BIRD OF CALIFORNIA

By JOSEPH GRINNELL

WITH ONE MAP

(Contribution from the Museum of Vertebrate Zoology of the University of California)

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INTRODUCTION

Up to the present time, the Band-tailed Pigeon has been taken practically no account of in the game laws of California. This may have been due to two things: to its lesser importance as a game bird, as compared with quail and ducks for which California is justly famed, and to its appearance sporadically in large numbers, which has given the impression that it was in no danger of depletion.

The unusual slaughter of pigeons in the southern coast counties in the late winter of 1911-12 (see Chambers, 1912, p. 108) has brought forcibly to the attention of ornithologists, the possibility of the extermination of our western wild pigeon. We would certainly be forever blamed if we took no steps to prevent a repetition of the deplorably thoughtless treatment which was given the now extinct Passenger Pigeon of the eastern states.

For the purpose of ascertaining the facts in regard to the standing of the Band-tailed Pigeon, and with a view of offering appropriate recommendations at the coming legislature, the writer was asked by the Secretary of the State Fish and Game Commission to compile all data obtainable in regard to the Band-tailed Pigeon, both as it exists now, and as it has occurred in the past.

This work was undertaken at the Museum of Vertebrate Zoology, with the assistance of Miss Margaret W. Wythe, and the results are presented in the following pages. Correspondence with many students of birds throughout the state produced surprisingly little definite information, and the literature of western ornithology proved scarcely more resourceful. We have, of course, exercised discrimination in getting at the real facts, as contrasted with general and hearsay statements.

It is believed that enough evidence is here given to demonstrate beyond any doubt the urgent necessity of the immediate passage of laws giving protection to the Band-tailed Pigeon. Otherwise the bird is plainly doomed to take its place in the growing list of North American animals which have totally disappeared as a result of man's misuse of natural resources.

General Distribution of the Band-tailed Pigeon

There has been more or less confusion in the popular mind as to the distinctness of the Passenger Pigeon from the Band-tailed Pigeon. Both have been called Wild Pigeon. The two species, however, are very different, and as far as known the ranges of the two nowhere overlapped. The Passenger Pigeon (*Ectopistes migratorius*) was restricted to the region east of the east base of the Rocky Mountains; the Band-tailed Pigeon (*Columba fasciata*) ranges from, and including, the Rocky Mountains westward to the Pacific Coast, though not of course continuously over the intervening desert areas.

Recorded localities of occurrence of the Band-tailed Pigeon extend as far east as Boulder County, Colorado, and western Texas, south into Mexico, and north to Vancouver Island and the adjacent mainland of British Columbia. Relatively few of these localities, however, are breeding places; many are of sporadic occurrences. So that the area outlined must not for a moment be thought of as supporting a pigeon population throughout its extent, either continuously or regularly.

In a general way it may be said that at the north and at high altitudes the species is only a summer visitant. To be more explicit, the Band-tailed Pigeon summers in the Transition life zone, whether this be in the northern part of its range or at the south. In the latter case the high altitudes of the mountain ranges resorted to, result in the same temperature conditions as at lower levels to the northward.

In winter the pigeon migrates to more southerly latitudes, or to lower altitudes, as the conditions make it necessary in order to reach a bearable winter climate. Although recorded south along the Mexican Plateau, it is believed that practically all the birds breeding to the north of the Mexican boundary winter within the United States, concentrating at that season in the extreme southwest.

From the data at hand pertaining to distribution, it seems probable that the pigeons of the Rocky Mountain region do not cross in migration to the Pacific slope, but winter with the locally bred contingent in suitable places near the Mexican line, in Arizona and New Mexico. In parallel fashion those pigeons appearing in the valleys of California in winter come from the mountains adjacent and from the Pacific Coast district to the north, in Oregon, Washington and British Columbia.

Local Distribution

The following facts bear upon the question of the source of at least part of the pigeons wintering in the valleys of California. The species occurs at Blaine, Washington (near the British Columbia boundary), from May 5 to September 15 (Dawson, 1909, p. 555); in southern Washington west of the Cascades it is present from May 15 to September (Coues, 1874, p. 386); and at the mouth of the Columbia River it is present from May to October (Bendire, 1892, p. 122). In Washington County, Oregon, it is common in summer (Anthony, in Bendire, 1892, p. 123); at Dayton, Yamhill County, Oregon, the pigeon arrives April 20 and leaves the last of November (Hadley, in Woodcock, 1902, p. 28); at Corvallis, Benton County, Oregon, it occurs from the first of April until the last of September (Woodcock, 1902, p. 28).

From the above data it will be seen that north of the northern boundary of California the Band-tailed Pigeon is wholly migratory. It seems inevitable that this northern bred contingent moves south *into California* for the winter season. In other words the entire pigeon population of the Pacific Coast region concen-

trates in winter in west-central and southern California. It becomes apparent, therefore, that as far as the whole Pacific Coast region is concerned, California alone is in winter responsible for the existence of the species.

The accompanying map (fig. 7) serves to show both the summer and winter distribution of the Band-tailed Pigeon within the state. Because of the small scale, record stations for the two seasons in some cases appear to be almost or quite coincident. But the rule may be laid down without hesitation, that this bird

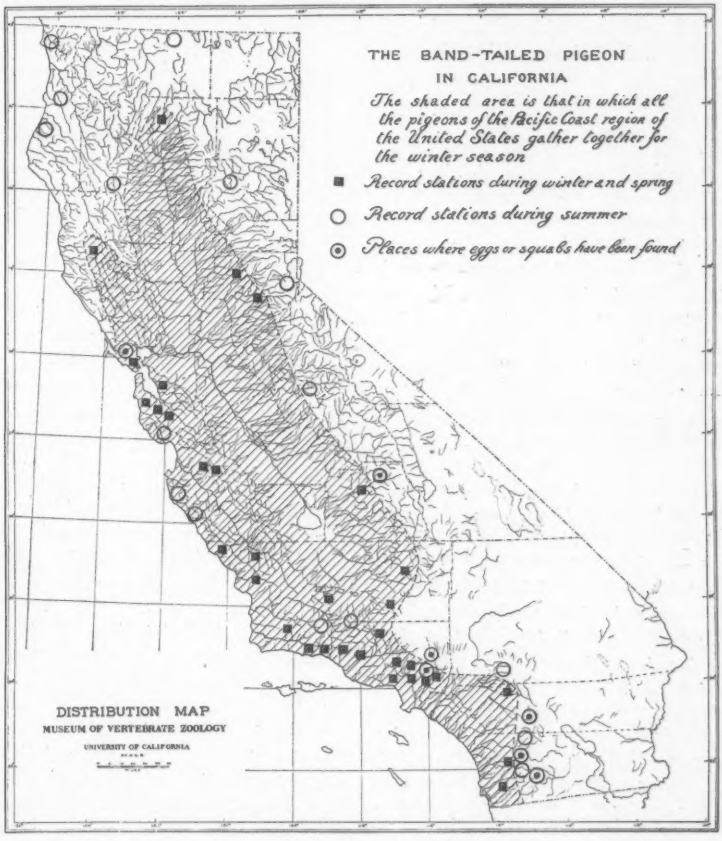
THE BAND-TAILED PIGEON
IN CALIFORNIA
The shaded area is that in which all the pigeons of the Pacific Coast region of the United States gather together for the winter season
Record stations during winter and spring
Record stations during summer
Places where eggs or squabs have been found
DISTRIBUTION MAP
MUSEUM OF VERTEBRATE ZOOLOGY
UNIVERSITY OF CALIFORNIA

Fig. 7

summers in the Transition zone and winters in the Upper Sonoran. Within our State there is thus a vertical migration coupled with a winter influx of birds summering to the north.

There is nothing to show that the individuals nesting locally on the mountains, and the northern migrants, flock separately, though this is possible. Neither is there any evidence to show that birds hatched in a particular mountain range always return to the same vicinity the following year, this being the case with some kinds of birds. On the contrary, our data does show, as far as it goes, that

local breeding places at least may not be fixed from year to year. There is considerable shifting, this irregularity being concurrent with varying food supply.

To illustrate: in case there has been in a certain mountain range an abundant acorn crop, sufficient to last throughout the winter, any flock of pigeons foraging there would be likely to linger on until the advent of the usual season of nesting. These pigeons would thus be more likely to remain there and breed that particular season, zonal conditions being favorable, than to move off to another mountain range. Such an explanation would appear to account for the vacillating numbers of breeding birds in the various more or less isolated mountain ranges of southern California.

Relative Numbers, Past and Present

It has been found practically impossible to estimate relative numbers of pigeons now as compared with any former period. This difficulty results from the variability from year to year in the degree of concentration of the birds in limited areas, and further from the sporadic distribution at any season. Reports of observers, therefore, no matter how explicit they may appear, cannot be used fairly in such inductions.

In fact, no single statement previous to that of Chambers (1912, p. 108) would lead to the inference that pigeons were ever more numerous than last year. But taking the above considerations into account, no significance can be given to such isolated statements. The literature examined gives no exact data; but we can, nevertheless, be morally certain that there has been a very great decrease in the numbers of pigeons since the early days of western settlement, when game of all sorts was so abundant as to arouse but little comment.

Food of the Pigeon

As already intimated, the amount of food available to the pigeon appears to be the main controlling factor in distribution, aside from zonal considerations. This is more particularly true in winter, though probably to some extent in summer also. As will be observed from the following data, the food consists chiefly of berries and nuts, of intermittent productiveness. A large crop one year in a certain region is almost sure to be followed by a barren year. So that the pigeons would fare poorly if dependent closely on any one single locality. Their proclivity for circulating over large areas makes available to them the abundant crops recurring at different places. The birds in great numbers are thus able to find support somewhere all the time.

Out of twenty-two records, ten give acorns as the chief article of diet. Probably all the species of oaks are patronized by the pigeons. Those especially recorded are: in west-central and southern California, the live oaks (*Quercus agrifolia* and *Q. wislizenii*), in the foothill regions, the golden oak (*Quercus chrysolepis*), and along the Sierra Nevada and on the San Bernardino and San Jacinto mountains, the black oak (*Quercus kelloggii*). The acorn season lasts well through the autumn months, and under favorable circumstances even until February.

As with all other food, the acorns are swallowed whole in such numbers that the crop becomes at feeding time enormously distended. In this dilation of the gullet the food is acted upon by the powerful digestive juices, and both shell and kernel rapidly disintegrate and pass on to the stomach and gizzard. There is no disgorgement of hard parts of the food, as with some birds. Considering the apparent small size of a pigeon's mouth, an amazing thing is its ability to swallow

whole such relatively huge objects as the acorns of the golden oak, in particular.

In the coast region of central California the berries of the madrone (*Arbutus menziesi*) form an attractive food source in the fall of the year. In certain instances bands of pigeons have been known to stay around tracts of madrones until practically every berry had been taken. Sometimes the birds feed so largely on these berries that the flesh becomes discolored thereby (Jenkins, 1906, p. 126).

The berries of certain species of manzanita (*Arctostaphylos*) are resorted to when acorns fail. The little apple-like fruits are eaten both green and ripe, becoming available in July as about the earliest crop. At times in midwinter, October to February, the pigeons fall back on the abundant fruit of the Christmasberry or California holly (*Heteromeles arbutifolia*), and more rarely upon the fruit of the coffee berry (*Rhamnus californicus*). The latter bears almost perennially.

There is a period of the year when fruit and nut crops have almost vanished. The flower and leaf buds of certain plants are then eaten in quantity. In February manzanita buds have been appropriated by the pigeons in the Sierran foothills (Dean, 1904, p. 111). In March and April the pigeons have been repeatedly observed to feed upon oak buds in the interior valleys of both west-central and southern California. One observer describes a bitter taste noticeable in the flesh of pigeons, thought to have been due to this diet of oak buds (Bendire, 1892, p. 123).

In southern California the sycamore balls are frequently eaten in early spring. No less than thirty-five of these ball-like flower clusters have been counted in the crop of a single pigeon (Evermann, 1886, p. 93). Various small plant seeds have also been reported as found in crops of pigeons.

Finally, in two instances, pine seeds have been found in the birds' crops: in Calaveras County in July (Belding, 1890, p. 21); and on Mount Pinos, Ventura County, June 29 (Grinnell, 1905, p. 382). It is, of course, probable in these cases that either the cones were fully ripe and the scales spread so that the seeds could be readily extracted, or that the seeds were picked up from the ground beneath the trees where they had fallen.

All of the above articles of diet include only wild fruits, such as are of indifferent value to man. At times, however, pigeons have been found to resort extensively to grain fields. In many cases the birds have repaired to stubble fields where they gleaned the waste grain, wholly worthless of course. Thus near Three Rivers, Tulare County, in July, 1891, pigeons were foraging in barley stubble (Fisher, 1893, p. 31). Then again, in a few instances, newly sown grain has been resorted to, with the result that more or less damage has been inflicted—the only way known in which the Band-tailed Pigeon affects man's interests unfavorably. At Palo Alto in January, 1901, good sized flocks were observed on newly sown barley fields. The crop of one bird was crammed with seed barley (Grinnell, MS). At Santa Monica, in February and March, 1901, flocks were feeding in grain fields. Their depredations were complained of by a rancher who had put out poison for them. Eight of the birds thus killed were examined (Swarth, MS).

"In March, 1901, great flocks of the pigeons poured into San Gorgonio Pass and fed in the barley fields. For about two weeks there were hundreds of them. * * * Their method of feeding was peculiar. Instead of spreading out they kept together, alternately walking and flying. Those behind would fly a few feet ahead of the advance line, alight, and walk along picking up grain until other rear ones would fly ahead and it came their turn again. In this way the flock

advanced, some in the air all the time, and ground was covered quite rapidly. The crop of a specimen secured * * * contained 615 grains of barley by actual count" (Gilman, 1903, p. 134).

The relative paucity of records of definite damage to grain leads to the conclusion that the amount of actual loss inflicted by pigeons is very small. For, if it regularly reached appreciable proportions, we would hear far more frequent complaints. The irregularity in distribution from year to year serves to mitigate such an adverse bearing of the pigeon. Only at long intervals are the birds likely to visit a given locality in just the appropriate season to have any effect on the grain interests.

Nesting Habits

Our Band-tailed Pigeon, unlike the Passenger Pigeon which once abounded in the northeastern states, does not nest in close colonies. Records show that with our bird, even where in summer numerous, the nests are widely scattered through a given tract of woods. An extreme case is reported from Arizona where, in the Huachuca Mountains, a community of about thirty-five pairs nested in a "scattered rookery, probably not averaging a nest to every three or four acres at the most thickly populated part" (Fowler, 1903, p. 69).

We find in literature a number of general statements to the effect that Band-tailed Pigeons "nest in small colonies". But in no case is there any detailed account of such nestings; and it may well be that these are general impressions or hearsay notions. It is true that all through the breeding season pigeons are seen in flight from place to place in small companies. It is possible that the component individuals belong to nesting pairs and convene in flocks when foraging, but isolate themselves when visiting their nests. This evident trait is probably responsible for the notion above referred to, that the birds nest in colonies. In the writer's experience in California, difficulty enough has been found in locating even one nest, and this when the birds were almost constantly in sight. The point is plain—that this species is not to be considered notably more sociable during the nesting season than the Mourning Dove. The pigeons scatter out at nesting time over large extents of suitable country.

Nesting places chosen vary considerably. According to Bendire (1892, p. 123), nests have been found, in Oregon, on the ground between two tree roots, upon an old stump eight feet from the ground, another in the top of a fir about 180 feet from the ground. In Washington, eggs are "often laid upon the bare ground of an oak grove, hop-field, or clearing, without pretense of nest". Usually, however, they are placed in fir saplings "at a height of ten or twenty feet, resting against the stem of the tree or upon a horizontal branch" (Dawson, 1909, p. 555).

Here in California, we have only hearsay statements to the effect that pigeons nest on the ground. Definite accounts of such a habit are lacking. Specifically described nesting sites are characterized by such remarkable uniformity in location that we are safe in concluding that the birds ordinarily select horizontal limbs of trees upon which to place their nests. Height above the ground varies in the described cases from 8 to 29 feet.

Nest trees, where named, have been black oak and golden oak, and these trees have stood in open mountain forests on canyon sides or steep slopes otherwise. In one case (Mailliard, MS) the nest was built upon the overhanging branch of a lilac, but this grew upon a rather open steep slope. It would appear that the birds select such a site as will allow of their taking direct and therefore rapid flight from and to the nest.

In structure the nests are mere platforms of coarse twigs. One now in the Museum of Vertebrate Zoology was obtained at Fuller's Mill, in the San Jacinto Mountains, at about 5900 feet altitude. The nest rested on a large limb of a black oak, about five feet from the main trunk, and was partly supported on one side by a small dead limb. The nest is a frail structure, made mostly of dead twigs from pine and oak trees. These twigs are laid crosswise so that there is a great amount of interstitial space. The diameter of the mass is about 220 millimeters (8¾ inches), though several straggling twigs extend far beyond this limit: the depth is about 100 millimeters (4 inches). The single egg rested at one side of the center of this rude platform. As remarked by Gilman (1903, p. 134) of two nests found by him in the San Jacinto Mountains at 6500 feet altitude, it is a marvel how the egg can be kept warm enough to hatch, resting on such an airy structure at that cool altitude.

It is believed that both birds take part in incubation. Bendire (1892, p. 127) states the period of incubation to be from 18 to 20 days. He states further that the young leave the nest about one month after hatching. If we allow one week for the selection of nesting site and construction of nest, a total of very close to two months is thus devoted to a single rearing.

Rate of Increase

In our present study, in which we are seeking for facts upon which to base recommendations relative to the proper treatment of the Band-tailed Pigeon so as to make it of greatest value to the sportman's interests, perhaps the most important thing to determine is the rate of reproduction of the bird.

Unfortunately the published information in regard to the number of eggs laid or young reared consists largely of general statements. At the north, in Oregon and Washington, there is no doubt but that two eggs not infrequently compose one setting. We have definite information that in the Willamette Valley three nests were found each of which contained two eggs (Bendire, 1892, p. 123). On the other hand, Dawson (1909, p. 553) says explicitly: eggs usually one, sometimes two. Another report, from Beaverton, Oregon, gives one as the complement (Woodcock, 1902, p. 28). In Arizona, all reports agree that but a single egg is laid. Three specific cases are on record of one egg being found in each nest. This is true also of Colorado.

In California we have heard frequent reports to the effect that two eggs are commonly laid. As shown from the accompanying table, so far as definite accounts are available, but a single egg was the full nest complement in all cases but one. If two eggs are laid it can thus only be in exceptional instances, so rare as to be ignored in deductions concerning rate of increase. The occasional extra egg might well be considered as offset by desertions of nests, or disasters from other causes. In no case has more than one squab been found in a nest, though the data is confessedly limited.

The egg-laying season of the pigeon is restricted at all latitudes to the summer months. This, as shown on previous pages, is probably correlated with the fact that the bird repairs to the Transition life zone for the breeding season, which, whether at sea level in the north or on mountain ranges at the south, presents inhospitable climatic conditions at other seasons. In fact, the birds themselves undergo an annual migration, latitudinal at the north, vertical at the south.

In the state of Washington, according to Dawson (1909, p. 555) the pigeons arrive at the latitude of the Columbia River in April and depart in October or November; they arrive at Blaine, near the British boundary, the first week in May

and are gone by the last of September. The same author thinks it possible that two broods might be reared in southern Washington but only one farther north; and he gives the nesting time as May to July. These months include all the specific dates given for the region north of California.

In the mountains of Arizona, nests with eggs have been reported with apparent authenticity from March 6 to September 25 (Bendire, 1892, p. 123). This indicates a protracted breeding season, though the extreme dates are probably quite exceptional. It does not follow either that the same pair of birds rears two or more broods the same year. That not all the birds nest in a given locality at the same time is attested by Fowler (CONDOR, 1893, p. 69.)

The accompanying table shows all the actual dates of nesting known to the writer within the state of California. Extremes are May 3 and July 30, the first for a fresh egg, the latter for an egg nearly ready to hatch. The mean date for

TABLE GIVING DATA IN REGARD TO THE NESTING OF THE BAND-TAILED PIGEON IN CALIFORNIA

Place	Date	Contents of Nest	Authority
Pine Mt., 3250 ft., San Diego Co.	May 3, 1901	2 eggs (fresh)	Sharp (1902, p. 16)
Pine Mt., 3250 ft., San Diego Co.	May 11, 1901	1 egg (incubation well advanced)	Sharp (1902, p. 16)
San Jacinto Mts. at 6500 ft., Riverside Co.	May 14, 1897	1 squab (just hatched)	Gilman (1903, p. 134)
San Jacinto Mts. at 6500 ft., Riverside Co.	May 14, 1897	1 squab (half-grown)	Gilman (1903, p. 134)
Mt. Wilson, 5500 ft., Los Angeles Co.	May 23, 1897	1 squab (about one week old)	Grinnell (1898, p. 20)
Cuyamaca Mts., 4 miles from Julian, San Diego Co.	June 4, 1896	adult bird on nest, but not flushed.	Albert M. Ingersoll (in letter)
Pine Mt., 3250 ft., San Diego Co.	June 24, 1901	1 egg (incub. adv.; same nest as May 11, 1901)	Sharp (1902, p. 16)
San Jacinto Mts. at Fuller's Mill, 5900 ft., Riverside Co.	July 1, 1908	1 egg (incubation slight)	Museum Vert. Zool.
Mt. Wilson, 5500 ft., Los Angeles Co.	July 5, 1894	1 egg (considerably incubated)	Grinnell (1898, p. 20)
Lagunitas, Marin Co.	July 30, 1912	1 egg (incubation far advanced)	Joseph Mailliard (in letter)
Barley Flats, 5600 ft., Los Angeles Co.	last of July, 1888	1 young (able to fly)	Antonin Jay (in letter)
Barley Flats, 5600 ft., Los Angeles Co.	last of July, 1888	1 young (able to fly)	Antonin Jay (in letter)

eggs in the nest is June 16. A remarkably brief nesting season is thus indicated as regards our immediate region, and the same evidently holds with our winter visiting birds from the northwest coast.

The general statement is prevalent in works on western ornithology that two or more broods are reared by the Band-tailed Pigeon each year. A close examination of all the definite evidence submitted makes such a state of affairs, however, improbable. The notion seems to have originated with the report (probably an intentional prevarication on the part of an unprincipled collector and dealer in birds' eggs) that the Band-tailed Pigeon bred in southern Arizona "nearly every month in the year, and several broods must be reared by each pair during the season". The observations made by Swarth (1904, p. 5) and Fowler (1903, p. 69) in the same region do not support the above statement.

Considering the time necessary to rear a brood—as already shown, close to two months—and the extreme dates between which eggs or young have been

found in nests, it seems impossible that, at least as far as our knowledge of the species on the Pacific Coast is concerned, more than one brood can be raised each year by a single pair of birds. It is probable that, should the nest be robbed, a second egg will be laid the same season. And this might account for some of the later nestings. We have record of such occurrence (Sharp, 1902, p. 16): On Pine Mountain, San Diego County, May 11, 1901, a bird was flushed from its nest containing one egg, incubation advanced; this was taken, and on June 24 of the same season a second egg nearly ready to hatch was found in the same nest.

The question is pertinent as to whether or not pigeons breed the first year, that is, when they are a year old. We have no facts to offer in this regard, save that domestic pigeons nest the first year. Although Band-tailed Pigeons are to be seen in small companies all through the nesting season, it is just as likely that the constituent birds belong to nesting pairs, congregated for foraging, as that they are non-breeders. The writer's opinion is that the wild pigeon breeds the first year.

From the above facts the startling conclusion is to be drawn that the rate of increase of the Band-tailed Pigeon is slower than that of any other game bird in America! If successful, each pair of pigeons rears one young per year.

Each pair of Valley Quail rears on an average ten young per year (see Bryant, 1912, p. 138). It is to be inferred that under primitive conditions the Band-tailed Pigeon was ten times as immune from fatalities due to predaceous animals and other causes aside from senescence as is the quail. For a biological axiom postulates that the birth rate in a species has become adjusted to meet the maximum death rate to which that species is liable under normal circumstances.

Enemies of the Pigeon

Our enquiry has failed to bring to light a single case where a pigeon has met death through other than human agency. The Cooper Hawk is in every hunter's experience known to prey regularly upon quail, levying a very heavy tax the year through. But no one has reported molestation of pigeons by this or any other hawk.

One may infer something as to the natural enemies of an animal from its behavior. Pigeons fly in the open; when not foraging they roost on the most prominent dead-topped tree in the neighborhood, where they perch conspicuously outlined against the sky whether the observer be posted directly beneath or on the adjacent hillside. They appear to be unaware of any possibility of attack from a winged enemy. The only one to be expected is the Duck Hawk, in coastal regions where this falcon occurs; for tame pigeons have been known to be pursued and captured by it. But, as stated above, we know of not one definite case of even the annoyance of the wild pigeon by any species of hawk. Its size and heavy coat of feathers doubtless makes the pigeon a less desirable quarry than many other game birds.

When foraging on open ground, pigeons show little trepidation, save as closely approached by the hunter, who has educated the birds by repeated shooting at the flocks. In the foliage of trees or bushes the birds are likely to remain perfectly quiet upon the approach of man or beast. They thus often elude observation altogether. If routed out by too close approach, they leave their perch abruptly with a disconcerting clapping of the wings, and with velocity acquired with surprising quickness are almost instantly far beyond reach of the bob-cat's spring or even the shot-gun's charge.

To recapitulate, the Band-tailed Pigeon is extraordinarily immune from na-

tural dangers, and its remarkably slow rate of increase was doubtless great enough to easily maintain its numbers under the conditions obtaining *before* the appearance of the white man and his firearms.

Factors Favoring the Persistence of the Pigeon

As we reflect upon the above facts of slow increase and gregarious habits our only marvel is that the pigeon has been able to maintain its existence at all in face of the fifty years or more of hunting to which it has been subjected without restraint. The factors which have allowed the persistence of the bird against this new and adverse condition are probably included among the following.

(1) The birds repair to forested areas for the breeding season. These are mostly in rough, mountainous country, sparsely settled by man. It is likely, further, that owing to the forest reserve system, of more and more recognized value as a governmental institution, these summer retreats will never be wholly destroyed through clearing or settlement.

(2) The pigeon does not nest in colonies, but the individual pairs scatter out through the woods.

(3) The pigeon is secretive in its nesting habits, so that the nests are not subject to molestation by marauding humans or beasts. "Their nests are mere platforms and hard to see; owing to the surrounding foliage, they are not readily discovered except by the actual flushing of the bird. One must be quick even to see the bird. It does not flutter along the ground in the manner of the Mourning Dove, nor does it sit on a nearby branch and coo, but is off like a shot; and it requires a pretty sharp eye to follow its flight through the trees" (Sharp, 1902, p. 16).

(4) In winter, although the pigeons gather in large flocks and concentrate in limited districts, they are irregularly distributed from year to year. That is, although they may be hunted to the verge of annihilation in a restricted area one season, the residue is not likely to return to the same locality the following year, and so be subjected to a repetition of the catastrophe. The nature of the food and the fact that this is of variable supply, leads to the wintering of pigeons in recurring seasons in rough mountain country where they are largely out of reach of hunters, thus giving the birds frequent respite.

(5) Several writers and observers, even as far back as Cooper (1870, p. 507), comment upon the quickness with which the pigeons become wary when shot at. They learn suspicion of hunters; "their shyness is probably due to the fact that in their passage from the north they are compelled to run the gauntlet of hundreds of gunners" (Henshaw, 1876, p. 265).

And here is one benefit which accrues from the flocking habit: individual safety is attained through community watchfulness. This may be considered as in part counter-balancing the possibility of pot-shooting numbers of the birds at one time because of their being massed in a flock. The gregarious habit brings to the hunted bird both benefit and danger; but with the increased deadliness of firearms, the constantly augmented numbers of hunters, and the ever greater facilities for quickly reaching a locality where pigeons are known to have appeared, it would seem that the flocking habit brings disproportionately greater danger to the birds, as time goes on.

The Destruction in 1912

Judging from recorded accounts, it is only at rare intervals that such a

slaughter has taken place as that noted in the southern coast counties of this state in the winter of 1911-12 (Chambers, 1912, p. 108). Indeed, as suggested by the writer cited, such unmitigated destruction could not last long without complete extinction as a result. In substance Chambers' account is as follows:

"Band-tailed Pigeons were abundant the past winter from Paso Robles south to Nordhoff all through the coast range of mountains. One hunter from Los Olivos shipped over 2,000 birds to the San Francisco and Los Angeles hotels. The morning train from San Luis Obispo to Los Olivos on Sundays averaged 100 passengers who came to hunt pigeons. A prominent hunter stated that these passengers averaged about thirty birds apiece per day. That would make this one day's excursion account for over 3,000 pigeons. Now—this is only one train and one day's hunting! One can hardly calculate the number of birds killed by hunters in automobiles, and by those who started from Los Angeles, San Francisco, Santa Barbara, Ventura, Santa Maria, Paso Robles, Lompoc, and other smaller towns.

"The writer, who is in the gun and ammunition business, was thoroughly disgusted with the game hogs who simply shot pigeons for the sport (?) and could not even eat them all. It is a shame that something is not done for these beautiful birds, which are doomed to follow in the footsteps of the Passenger Pigeon. I honestly believe that the people will never again see such a flight of Band-tailed Pigeons. In Nordhoff it is the largest they have ever seen, and the birds evidently hung around until they were simply shot out. This same state of affairs is probably true in other localities.

"If something is not done very quickly these birds are doomed; for any bird that flies in such flocks is bound to be exterminated. What can be done?"

It is probable that an unusual concentration of the pigeons from the whole Pacific Coast region into a district easily reached by hunters gave exceptional opportunity for the infliction of the slaughter above recounted. The weak place in the pigeon's defense thus comes when conditions of restricted food supply force it into localities where its survival depends upon whether or not hunting is sanely regulated. Obviously, suitable legislation must be enacted at once, before chance of a repetition, even in lesser degree, is afforded.

The Value of the Pigeon to Man

A bird in its relation to man may be considered in four different bearings.

(a) No matter what the degree of value of an animal to man's interests (and it may, on the whole, be even of extreme detriment), to allow complete extermination is out of harmony with an enlightened consideration of the future. Our successors will not approve of our thoughtlessness in completely destroying the grizzly bear! No matter if the Band-tailed Pigeon had no value, or was even noxious economically, this is no reason why the life of the *species* should be jeopardized.

(b) Very many of our birds are of pleasing plume, cheerful manner, and attractive song, thus bringing an active appreciation on the part of the majority of mankind. In this role birds at large have a marked esthetic value. The Band-tailed Pigeon is admittedly of very little or no attractiveness on this score. Its voice is not at all pleasing, as is that of the Mourning Dove, and its reclusive habits bring it rarely to the notice of any except the hunter.

(c) The economic value of many birds is positive. They perform distinct service in destroying injurious insects or seeds. Other birds are decidedly the reverse, because of their ravages on crops. As shown on previous pages of this

paper, the Band-tailed Pigeon is practically indifferent in its bearing upon agricultural interests. The bird feeds upon native fruits and nuts of no value to man. At times it forages over stubble fields for waste grain. In rare cases newly sown grain fields have been raided to an extent to amount to definite damage. We are safe in saying that the pigeon has no beneficial bearing upon agriculture; it is at least indifferent.

(d) Game animals form an important asset of the state, because they are of direct use to man as food, because their pursuit leads to pleasurable and hearty out-door exercise on the part of many men who otherwise pursue sedentary lives, and because hunting by whatever means and to whatever extent involves large commercial dealings. We would not here include the market value of game, as the time is clearly close at hand when market hunting will be altogether a thing of the past; non-sale of game is the only justifiable course.

The Band-tailed Pigeon probably never did compare favorably in importance to the sportsman with quail or ducks. Its large size, and consequently greater food value, certainly gives it superiority over the dove as a game bird, though its numbers at best probably never approached those of the dove. The latter, too, was far more accessible.

The flesh of the pigeon is asserted by the majority of those who have eaten it to be delectable, favorably comparable with that of other game birds. In a few cases it is described as tough, though experience teaches that with any meat mode of cooking has chiefly to do with the results. One person (Bendire, 1892, p. 123) complains that in Oregon the flesh of pigeons shot at certain seasons was "bitter." This was thought to be due to the nature of the food locally. It is safe to say that no criticism of the pigeon as an article of food will receive general confirmation.

We have no statements from sportsmen of experience as to the rank of the pigeon as a bird worthy of skill in stalking and marksmanship. Volumes have been written with regard to quail, doves and ducks. The pigeon is doubtless, because of its totally different habits, in a class by itself. The writer has hunted pigeons to a small extent, and while confessedly not an acute sportsman, must admit that no other game bird, except jack snipe, has offered him so much of the hunter's exhilaration.

We have reason to believe that from every standpoint the pigeon deserves high consideration as a game bird of California. As has been clearly brought out this is the chief value of the bird to the interests of the state. Granted the last stated proposition, the next question to claim our attention is as to the means by which the pigeon may be brought to a point where it will be of greatest use as a game bird.

Legislation Recommended

Up to the present moment not one whit of protection has been accorded the Band-tailed Pigeon in the State of California, save that in common with other game birds it has recently been declared a misdemeanor to destroy its eggs. At the same time there has been neither close season, nor bag limit, nor non-sale. It has thus been possible to slaughter pigeons at any season, and in any numbers, and to sell them without restriction in the open market!

This is exactly what occurred in the spring of 1912. To re-quote from Chambers (1912, p. 108): One hunter from Los Olivos, Santa Barbara County, shipped over 2,000 birds to San Francisco and Los Angeles hotels. The morning train from San Luis Obispo to Los Olivos on Sundays averaged 100 passengers who

came to hunt pigeons. A prominent sportsman stated that these passengers averaged about thirty birds apiece per day. This would make a single day's excursion account for over 3,000 pigeons. The pigeons "evidently hung around *until they were simply shot out.*"

Is it not obvious that we have now allowed the unrestricted killing of pigeons until actual extermination *is* threatened? Is it not now too late for the enactment of *restrictive* measures to have any benefit in saving the pigeon as a game bird? Is not the only alternative demanded by the facts, an extended close period, so as to allow the pigeon to recover somewhat of its former strength?

When we consider the extraordinarily slow rate of reproduction of the Band-tailed Pigeon—as slow as that of the Black-tailed Deer which for more than a decade has been accorded a long annual close season and a bag limit of *two* in one *year*—in conjunction with the uncurbed slaughter to which the bird has been subjected, only one course appears to be open if we wish to re-establish the pigeon as an important game product of the state. It should be accorded at least *five years' total* protection. This would give it a chance to recover to a certain extent from the long period of unrestrained killing which it has up till now endured with the odds increasingly against it.

Only such a close season, put into effect at once, will save the Band-tailed Pigeon, *as a game bird*. Because of the probable permanence of our mountain fastnesses scattering representations of the species are likely to persist, in spite of continued persecution, for a few years to come. But if we are to count upon the Band-tailed Pigeon as an element of value in the game resources of the state, appropriate measures must be enforced to allow the re-growth of an adequate breeding-stock, and thereafter the annual toll by hunters must be restricted to a percentage inside of the birth-rate.

Summary

The Band-tailed Pigeon has been reported in greater or less numbers from widely separated localities, from the Rocky Mountains to the Pacific, and from British Columbia to Mexico. Yet the evidence at hand leads to the belief that all those birds breeding within the Pacific Coast region from Vancouver Island south to the Mexican line, concentrate during the winter season in the valley and foothill sections of west-central and southern California. It becomes clearly apparent, therefore, that California holds the key to the future of the species as far as the Pacific slope is concerned.

Because the pigeon is broadly scattered throughout the forests and mountains of the whole Pacific district during the summer, it is not at that season particularly liable to decimation. But it is during the *winter,* when the birds are forced by uneven food supply into small areas in central and southern California, that there is a chance for almost unlimited destruction by hunters, such as occurred in the late winter of 1911-12.

In rate of increase, the Band-tailed Pigeon is by far the slowest of all our game birds. As a rule but one young is reared each year. Contrast this with ten among quail, eight among ducks, and four among wading birds. The impressive fact that our wild pigeon does not exceed, in rate of reproduction, the birth-rate of deer, antelope and elk, suggests the demand for treatment in game legislation to correspond with that given these large mammals.

Because of the dependence of the Band-tailed Pigeon upon wild fruits and nuts, and because of the varying crop of these from year to year, the winter distribution of the bird is practically never the same two years in succession. While

this irregularity in winter distribution frees the bird from the danger of continued pursuit in one locality, it on the other hand brings the entire pigeon population during recurring years into regions thickly populated by man, or at least of easy access to the hunter.

The chief or only value of the pigeon to man lies in its service as a game bird, and as such, it is pre-eminently worth cultivating. There is every reason to believe that the Band-tailed Pigeon is now represented by such very small numbers, as compared with its original abundance, that there are not enough birds even to warrant a restricted period of shooting annually. The thing which must be done, if we want the bird to figure at all in the future among our game birds, is to accord it a close period of at least five years. In this time its numbers should regain a stage where a subsequent annual open season would be warranted.

As it is, the Band-tailed Pigeon has been left practically without protection and subjected at times to unlimited slaughter, until the bird is now undoubtedly beyond effect by any measure except the close period here advocated. In fact, there is grave danger of total extinction, as in the case of the Passenger Pigeon of the east. And circumstances are very much the same as regards the attitude of man until too late.

Steps must be taken immediately to give the Band-tailed Pigeon that degree of protection which will insure its permanent existence as a game asset of the future.

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FROM FIELD AND STUDY

Another Instance of Cannibalism in the Spotted Owl.—The Spotted Owl, *Strix occidentalis* (Xantus), is a rather rare bird in this section of California, judging from the number of skins in southern California collections. Lucky is he who, after a dozen years' work in the field, can place more than one specimen to his credit. For this reason I wish to record one shot by R. D. Jewett in Pacoima Canyon, above the junction with Maple Canyon, back of San Fernando, California.

A pair had been heard the night before, and campers had fired several shots in the direction of the sounds, evidently with results, for on the following night only one bird was in

evidence, continually moving about and calling. This bird was shot within the range of the campfire light, at 10 o'clock in the evening of September 28, 1912. It proved to be a female, with its crop gorged with the fresh remains of a Pigmy Owl (*Glaucidium gnoma pinicola*). One foot, leg, and a mass of feathers was swallowed entire, and bid fair to produce severe injury, as two of the claws had already pierced the crop and the skin of the throat, allowing the contents to ooze forth.

A similar instance is recorded by C. H. Richardson, Jr. (CONDOR, VIII, 1906, p. 57), in which a Spotted Owl was found to have dined on a Pigmy Owl, and considering the rarity of both species, the coincidence is remarkable.—FRANK S. DAGGETT.

A Specimen of Bendire Thrasher in the San Diegan Region.—On September 10, 1912, Mrs. Harriet Williams Myers placed in my hands a live bird which had proven a puzzle to her in her attempts to identify it. The bird had been picked up helpless in a street of the Garvanza district of Los Angeles, California, near the hills between that city and Pasadena, and despite her most painstaking care had failed to mend. It was turned over to me as of possible interest, and proved to be *Toxostoma bendirei* (Coues).

The specimen was submitted in final appeal to Messrs. Grinnell and Swarth of the Museum of Vertebrate Zoology at Berkeley, who consider it a juvenal of the year, just molting into first winter plumage. Mr. Grinnell raises the question of possible artificial introduction as a caged bird, a natural question in view of the sedentary habit of the species in its normal habitat. The superb musical powers of the species would make it a desirable cage bird, but, in a somewhat extensive collecting experience over southern Arizona, although I found Cardinals and House Finches used in this way, the thrashers never were.

With the consent of Mrs. Myers the specimen is deposited in the University of California Museum of Vertebrate Zoology where it is catalogued as No. 23259.—LOYE MILLER.

Birds New to the Vicinity of Lake Coeur d'Alene, Kootenai County, Idaho.—*Colymbus nigricollis californicus.* Adult specimen examined October 9, 1912.
Gavia lumme. Young female specimen examined October 6, 1912.
Oidemia perspicillata. Adult male specimen examined October 9, 1912.
Bubo virginianus arcticus. Two adult specimens examined October 8, 1912.
Falco mexicanus. Fine specimen examined November 6, 1912. Not new in this locality but very scarce.—H. J. RUST.

White-throated Sparrow in Western Washington.—On October 13 I had the good fortune to collect a female White-throated Sparrow (*Zonotrichia albicollis*) at Sherlock, Thurston County, Washington, the first record, I believe, for any point on the Pacific Coast north of Oregon. This bird was with a big flock of *Z. l. nuttalli*, which had begun to arrive the previous afternoon. This migration was an odd occurrence in itself, as all the local breeding Nuttall Sparrows had left several weeks before.—J. H. BOWLES.

Some Late Nesting Notes from the Huachuca Mountains, Arizona.—On July 29, while locating a site for a wood cutter's camp I heard the "whip-popper" note of a Palmer Thrasher (*Toxostoma curvirostre palmeri*), and on looking into the only cholla in sight found the nest and two fresh eggs. Two weeks later the latter had hatched, and during September and October I saw the young birds frequently about the camp, whenever I happened out there.

September 1 I was in Ramsay Canyon for a few hours, and from force of habit, spent part of the time looking around a bit. On the lard bucket bail which I had hung up in the identical place from which I had taken my set of Blue-throated Hummingbird (*Cyanolaemus clemenciae*), previously recorded in THE CONDOR, I found a new nest and two well feathered young. A week later, they were still in the nest but almost able to fly. Their backs showed the green shades very nicely, and there was a slight darkening on the throat of one, somewhat in the nature of specks. I took photos of them, hanging the nest down in the light for that purpose. They fluttered out as I took them down, but remained quiet after being replaced.

October 4, my uncle, Mr. F. N. Wolcott, while deer hunting, flushed a Band-tailed Pigeon (*Columba f. fasciata*) from its nest in a small oak. The one egg was fresh. I tried to locate the place a week later but found only an empty nest which may or may not have been the one he saw.—F. C. WILLARD.

More Band-tailed Pigeon Notes.—On a recent trip to San Luis Obispo I gathered

some more apparently authentic information which is worthy of recording, furnished me by a person whose name will be withheld for the present. San Luis Obispo was the main outfitting station for the pigeon hunting during the great flight of 1911-12.

One market hunter, shooting for the San Francisco market, killed 280 pigeons under one oak in one day. This same hunter was shooting every day during the flight, so it can be imagined what a number he must have killed. One dealer in ammunition sold 3500 shotgun shells for one day's hunt, and he says that on that day the individuals on this excursion brought in 1560 birds. These figures, together with the note previously published in THE CONDOR (XIV, 1912, p. 108), will give some idea of the extent of the slaughter. I firmly believe that these figures are not exaggerated, and that they are not far from the truth.

Hunters are now reporting a few pigeons at San Luis Obispo and at Santa Barbara. The first noted each year are termed scouts by the old hunters, who believe that the main army sends scouts on ahead to report on food conditions. The hunters are looking for another big flight this winter.

I will be in this country regularly during the coming season, and will keep a close watch on this beautiful but apparently doomed bird.—W. LEE CHAMBERS.

No-Sale of American-killed Wild Game.—Readers of THE CONDOR, and especially members of the Cooper Club, should take every opportunity to correct impressions which are being distributed broadcast apropos the effect of a "No-sale" law.

It has even been said that this measure is "class legislation." Laws which *permit* the sale of game are, it is true, class legislation of the worst type. They permit a few hundred market gunners, and the wealthy hotel and cafe patrons who are financially able to purchase game to reap the benefits of that which is protected at the instance of all people of the state. They are also allowing the rapid extermination of our best native species. Every animal which has been allowed to be exploited for profit has been practically exterminated. Even the whales of the sea are no exception! Remember the sea otter, the buffalo, the passenger pigeon!

To allow of the unlimited sale of game in California, as Assemblymen Harry Polsley of Red Bluff and Milton Schmidt of San Francisco desire, would be to cause its utter extermination within ten years.

Letters on file in the California Museum of Vertebrate Zoology indicate that ducks and geese have decreased from fifty to ninety-five per cent in the San Joaquin Valley in the last ten years.

We must have No-sale, and we must have it immediately.—W. P. TAYLOR.

An Unfortunate Dove.—On Monday, June 17, 1912, near Goose Lake in Modoc County, I found the body of a Mourning Dove which had met death as the result of a very peculiar misfortune. The bird was found on a horizontal beam four inches wide in an old deserted barn. It was facing the wall, i. e., lying crosswise of the beam, with the tail hanging over and closely hugging the side of the timber, as though its death throes were concerned with maintaining its precarious position. The cause of death was not far to seek. The upper mandible had been jammed backward and downward through or behind the ramus of the lower one, whence it could not be retracted. Not only so, but skinning showed that the windpipe had been caught and skewered, and pushed forward along with the distended skin of the mentum. The bird was in a very emaciated condition, insomuch that the skin was very largely adherent to the flesh, and the end of the breastbone touched the anus. The viscera were a green mass, which for fear of poisoning we did not dissect for sex indication; but the bird seemed recently dead, inasmuch as there was no offensive smell, and the feathers were firmly in place. Moreover, no insect pests had begun to attack it.

Fig. 8. AN UNFORTUNATE DOVE

Mr. Allan Brooks, who has examined the specimen, is of opinion that its plight was due to a recent head-on collision with a telegraph wire, and cites the example of a Western Chipping Sparrow whose bill was in exactly similar condition save that the wind

pipe was not involved. This dove, moreover, was a last year's bird, so that its peculiar hap could not have been due to a misguided paroxism of parental regurgitation as I was at first inclined to surmise.—W. LEON DAWSON.

The Supposed Occurrence of the Blue Goose in California.—The recurring statement that the Blue Goose (*Chen caerulescens*) is of casual or occasional occurrence in California, an assertion which, on rather weak evidence, has had wide acceptance, renders it particularly desirable that the capture of every bird supposed to belong to this species be investigated, and the identity of the specimen be thoroughly established. This, however, is not always possible, as the birds on which hunters' statements are based are seldom saved long enough to afford an opportunity for examination.

The present remarks are incited by a recent instance, in which the capture of a Blue Goose appeared to be well authenticated, and which may serve as a demonstration of the extreme care to be used in accepting records whereby closely similar species may be confused.

A letter was received from F. J. Smith, of Eureka, Humboldt County, California, stating that he had in his possession a specimen of the Blue Goose, taken in that vicinity, on October 22, 1908, and requesting permission to send it to the Museum of Vertebrate Zoology in order that his identification be confirmed. The bird arrived soon after, and was carefully examined. Although the Museum collection contains no specimens of *Chen caerulescens*, it does contain a fairly large series of *Chen hyperboreus hyberboreus*, and on comparison the supposed Blue Goose proved to be a bird of this form, in the grayish, immature, plumage.

A search through descriptive literature failed to bring to light any statement clearly defining differences between the immature plumage of *caerulescens* and *hyperboreus*, and the question naturally arises as to whether previous supposed instances of the occurrence of *caerulescens* in California have not also been founded upon young birds of *hyperboreus*, the two forms being so very similar in this stage.

The Blue Goose was first included in the list of California birds upon the strength of the statement by Belding (Zoe, III, 1892, p. 97) regarding the capture of two specimens near Stockton, February 1, 1892. Fragments of one of them, head, neck, wings and legs, were submitted to Mr. Ridgway, and by him pronounced to be juvenile *caerulescens*. While the authority in support of this record is thus of the highest degree, still, considering the apparently close similarity of the two species *hyperboreus* and *caerulescens* in the immature plumage, and the absence of corroborative evidence since the time of Belding's record, we are surely justified in demanding stronger proof of the occurrence of the Blue Goose in California.

The specimen suggesting these remarks is an example of the ease with which mistakes in identification can be made. From written descriptions alone there was nothing to disprove its being *caerulescens*, either that species in immature plumage having no distinctive peculiarities serving to distinguish it from the same stage of *hyperboreus*, or else such differences having never been clearly set forth; but comparison with examples of *hyperboreus* unmistakably demonstrated the fact of its belonging to this species.—H. S. SWARTH.

The Black-chinned Hummingbird in Marin County, California.—While driving along the road at San Geronimo, Marin County, California, one day last spring (1912) I was hailed by C. A. Allen, who came out of his house to tell me of having noticed a strange hummingbird among the usual number of Allens and Annas that nest in his yard every year, and that he had finally captured it. This stranger turned out to be a male Black-chinned Hummingbird (*Archilochus alexandri*), and is the first record of this species in Marin County, as it does not seem to take kindly to the humid coast belt, but works its way to its northern limit by following the more interior valleys. Mr. Allen said he thought we ought to have the specimen on account of our having been so closely associated with Marin County for so many years, but he was collecting for Dr. Jonathan Dwight, Jr., at the moment, and felt that the specimen must go to him. Soon after receiving it Dr. Dwight wrote me of the circumstances, and said that he felt as if he were encroaching on our preserves, that the place for it was in our collection (Coll. of J. & J. W. Mailliard), and that it should be recorded by one of us. In due course the specimen arrived, and is now in the place where Dr. Dwight thought it ought to be. I mention these details in order to show our appreciation of the graceful courtesy thus shown to us—a sort of courtesy that ever should but does not always exist among collectors. The date on which this hummingbird was taken was March 3, 1912.—JOSEPH MAILLIARD.

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EDITORIAL NOTES AND NEWS

Every one of our readers will doubtless join with us in congratulating Mr. William Leon Dawson on his remarkable success with the Surf-birds, as described on the first pages of our new volume. Here is a bird so rare that many a large collection entirely lacks a specimen; yet a flock was "captured" by the camera, and the results now presented bring the species to the intimate acquaintance of anyone who sees our magazine. We may say *sub rosa* that Dawson has some more conquests, to be announced in the course of the year.

The publication of two more numbers of the Cooper Club's *Avifauna* series is planned for the year 1913. The manuscripts for both are now in the Editor's hands and will go to the printer as soon as our Business Managers, Chambers and Law, give the word. The titles of the two new brochures are: "Birds of the Fresno District, California", by John G. Tyler; and "Distributional List of Arizona Birds", by Harry S. Swarth.

Mr. George Willett left San Francisco December 5 as one of a party headed by Commodore Salisbury, U. S. N., organized to visit several of the small islets northwest of Hawaii. The expedition is sent out under the auspices of the U. S. Biological Survey, and has for its chief object the inspection of Laysan Island. Here it is proposed to take a census of the sea-bird population and to take steps for further protecting the colonies of albatrosses recently threatened with extermination through the raids of plumage hunters. Another danger menaces the burrowing petrels, namely, rabbits. These mammals were thoughtlessly liberated on the island some years ago and it is feared will rout out certain birds from the very limited nesting area of the latter. It is hoped that some means may be discovered by which Laysan will be entirely rid of the mischievous rabbits.

Mr. R. H. Beck, so well known for his splendid make of water-bird skins, left San Francisco December 15 for a year's field work around the southern end of South America. He will pay especial attention to the sea-birds, collecting on this trip in the interests of Dr. L. C. Sanford, of New Haven, Connecticut.

Mr. A. C. Bent is planning an expedition for the early spring along the coast of Lower California in quest of birds. He will be accompanied by H. H. Kimball and H. W. Marsden.

It is perhaps oftenest the wisest thing to hush up an unpleasant matter, especially if it involve a member of one's own household or an associate in social or club affiliation. In the present instance, however, the opportunity for the pointing of a good strong moral seems to overbalance the instinct for clannish secrecy.

The Cooper Ornithological Club has always stood for absolute honesty, more particularly in regard to whatever relates to its own field of interest. One purpose of the Club is to contribute to ornithology as a science, in other words to add *facts* to our knowledge of birds.

The case referred to is one where the evidence pointed toward the fabrication of data by a Club member, such spurious data having been put in circulation attached to certain specimens. To state the case plainly, "facts" were forged, and might easily have found place in published literature. Who knows but what such has really happened, though now beyond finding out?

Needless to say, the tainted name has been expunged from the Club's membership roster, after due procedure, as noted in the Minutes.

Unscrupulousness in the statement of scientific detail is, of course, not distantly allied to "nature-faking." The former is criminal, the latter very nearly so. Neither are to be countenanced by the true student, typified in the Cooper Club's membership.

It is probably superfluous to urge the distinction between the above exhibition of perversity, and the innocent making of mistakes. Not one of us has contributed to published ornithology but what experiences gnawing regrets over mistakes of which he was originally unaware. As long as these regrets stir the soul, one may be sure that he is possessed of a scientific conscience justifying him, with increased care for accuracy, in further contribution.

The California Associated Societies for the Conservation of Wild Life, of which the Cooper Club is a member, has practically concentrated its attention on the proposed bill prohibiting the sale of game. The measure as drawn up is in ideally good hands. Senator William R. Flint, popular, influential and able, has already introduced the bill.

Communications and editorials from all over the State and the United States are being received demanding that the sale of game be prohibited. A book by Dr. Wm. T. Hornaday, Director of the New York Zoological Park, just issued, says California's game is doomed unless a non-sale law is passed at once.

The National Association of Audubon Societies, the New York Zoological Society, and the Campfire Club of America are urging California to join the distinguished roll of eighteen states that have entirely prohibited the sale of game.

Now! Every reader of THE CONDOR, and especially every Cooper Club member, who believes in the justice of this cause, can render effective help by writing immediately to his Assemblyman and Senator as well as to Hon. George J. Hans, Chairman Senate Committee on Fish and Game, and Hon. John H. Guill, Chairman Assembly Committee on Fish and Game, requesting their support for the Flint bill, prohibiting the sale of game. Write also to Senator Flint, assuring him of your hearty support.

The following extract from an editorial in the FRESNO REPUBLICAN makes short work of the absurd claim that the man who does not hunt is deprived of a natural right if he cannot buy game to eat. The great mass of people hunt for sport; only the hotelman and the market gunner hunt for private pockets in order that lazy Croesus may "buy a duck when he wants it!"

"They will simply have to go without it for awhile," was the reply made at a hearing in Sacramento to the query what the people who do not shoot will do for game, pending the development of its commercial production for sale. And the *Examiner* takes this as a confession of the absurdity, and injustice of the whole scheme of reserving wild game from tame commerce.

But why not? Are the only privileges to be those of money? Are we so commercialized that the normal way of getting everything must be to buy it? There are plenty of things —diamonds and champagne and automobiles, for instance—that most people must go without. Those who can afford these things see no injustice in the exclusion of those who cannot. The exclusion is commercial, and therefore, to the commercial-minded, it is conclusive. But when any other standard of distinction is suggested, by which they would be the excluded ones, then they grow righteously indignant. Yet once it was quite axiomatic that all good things belonged to the strong as it now is that they belong to the rich. The mighty hunter had the game, the mighty warrior the government and the mighty miser his gold heaps—unless the warrior and the hunter took them away from him. The mighty thinker, then as now, had no privilege but the hope of posterity's recognition. But now the mighty miser demands the first fruits of all the others, and sets himself up as the only privileged class. That the game should be the privilege of the hunter strikes him as an invasion of his own rignt to monopolize all privileges to himself.

Yet already most of the best things of life are attainable only by other processes than purchase. *The best part, even of the game, is not the eating, but the hunting of it.* Pampered Croesus, at Delmonico's may eat his canvasback, and carp because it was on the fire nineteen minutes instead of eighteen. But who shall buy the sunrise, the tang of the morning air, the mists on the salt marshes, the spell of the hunting and the triumph of the successful shot? *Ten thousand generations of hunting ancestry bequeathed us the instinct whose satisfaction is the huntsman's joy. But it is a thing to be achieved by stout legs, clear eyes and steady nerve, and is for sale to no fat purse except for personal exertion also. Is it imperative that the mere incidental gastronomic product of that uncommercial activity shall be open to commercial access?*

The two finest mountain views on the American continent are doubtless those from the summits of Mt. Whitney and Mt. Dana. They are open to any man with strong legs and sound lungs, and the price of beans and bacon, but a million dollars will not carry a man to them in a Pullman car. The love of a good woman is one man's freely, for his own devotion in return, but it is no man's for pay. Money will buy books and pictures and music, but not the knowledge to appreciate them. And the touch with wild things, and the hereditary lure of the wild man's chase for them—these are something better than buying and selling. *If, to preserve the wild poesies and to keep alive the untamed pursuit of them, it becomes necessary to separate the products of the hunt from organized commerce, until commerce itself can produce what it consumes, there is no injury done except to the fiction that all things are the natural right of him who is able to pay for them.*—W. P. T.

REPORT OF PROGRESS IN CONSERVATION

To contingent organizations making up the

California Associated Societies for the Conservation of Wild Life:

An organization like the Associated Societies suffers a considerable handicap at best through the lack of coordination between the organizations and individuals making it up, this lack of coordination being the result of the spatial dispersment of the membership, and of the absence of a medium such as an official publication to keep each individual member fully informed. It is hoped that the publication of this report in the organs of the constituent societies will, in a measure eliminate this disadvantage.

As to the work of the Associated Societies: At the meeting of the Executive Committee, held December 19, a particular program of improvement along wild life conservation lines was decided upon. This program emphasizes the "no-sale of American-killed wild game" law, and the putting of assistants and wardens of the State Fish and Game Commission on civil service basis, as of supreme immediate importance.

Hundreds of letters have already been sent out; many of these requesting donations of money to be used to carry on the work; others to persons of influence throughout California, as a means of getting them to work with us; and others to legislators, calling their attention to the alarming decrease in our native fauna, and requesting their best attention to the field.

A news letter on "No Sale of Game" has recently been printed and sent out to a hundred of the most influential newspapers in California. Other news letters dealing with other phases of the work will be dispatched as finances permit.

As was anticipated, powerful selfish interests oppose us. The San Francisco hotel men, who would feel the effect of a no-sale law, have already stimulated the kept press to do their bidding. If we can get the facts to the people, there is no question of the result.

We can get the facts to the people if we are given the necessary finances.

Shall we permit California's fields, marshes, and forests to become devoid of all animal life? Shall we stand for the destruction for profit of our wild life, one of California's most attractive features?

The Associated Societies must answer these queries with a decisive "No!" and must be able to follow up the negative with a vigorous and able demand for constructive legislation.

You can help—(1) by becoming an islet of information along this line, (2) by awakening enthusiasm in wild life conservation, (3) by keeping track of your representatives in the State Legislature, and last but not least (4) by seeing to it that your society makes a donation to the war chest of the Associated Societies, and by making a donation personally if you are able to do so.

Here is the challenge. The enemies of wild life—the men who put the dollar above all else—are united and have powerful financial ability. Will you accept the challenge, and enlist in the Army of Defense?

The aim of the Executive Committee is to weld the California Associated Societies into a powerful and effective fighting machine. The assistance of each constituent society, and so far as possible, of each member, is earnestly desired.

Respectfully submitted in behalf of the Executive Committee.

W. P. Taylor.
Secretary-Treasurer.

PUBLICATIONS REVIEWED

Food of Our More Important Flycatchers, by F. E. L. Beal (U. S. Dept. Agric., Bureau Biol. Surv., Bull., no. 44, 67 pages, 5 pls; Sept. 19, 1912).

The flycatchers are to be numbered among the birds which are almost wholly insectivorous. Their economic value, measured by their destruction of injurious insects, is, therefore, very great. The above cited recent bulletin of the Bureau of Biological Survey, by F. E. L. Beal, records the food of seventeen species of flycatchers, and proves their value as allies of the farmer and horticulturist.

In discussing the food of the Arkansas Kingbird, Mr. Beal says: "Honeybees (*Apis mellifera*) were noted in 5 stomachs. In all, there were 31 bees, of which 29 were males, or drones, and 2 were workers. This bird has been accused in California of eating honeybees to an injurious extent. It was said that the bird lingered near the hive and snapped up the honey-ladened bees as they returned from the field. This statement is not borne out by the facts stated above."

Even granting that much of the complaint received from bee-keepers is based on circumstantial evidence it still seems reasonable to believe that this bird takes larger numbers of the workers than the evidence would indicate. Many bee-keepers complain bitterly that kingbirds destroy queens as well as drones. As many make a business of raising queens for the market their loss can easily be reckoned in dollars and cents. The fact that queens look and fly more like drones makes this complaint seem reasonable. Looking at the same question from another point of view: Stomach examination may not furnish accurate evidence as to the numbers of workers destroyed; for kingbirds, like orioles, may

drop the worker after crushing it in their bill to get the honey.

In the examination of 3,398 stomachs of flycatchers the animal food was found to average 94.99 per cent and the vegetable 5.1 per cent. The presence of a considerable percentage of parasitic Hymenoptera in the stomachs of flycatchers appears to be the one thing that makes their service questionable. However, "weighing as impartially as possible the injuries done and the benefits conferred by them, their good qualities outweigh the bad."

The tables giving a summary of the results of the stomach examinations furnish an interesting comparison of the food of the different species. The long lists of identified insects show careful and painstaking work. Although these lists may be overlooked by most of the farmers reading the bulletin, they give the publication a more permanent value than it would otherwise have.—H. C. BRYANT.

A HISTORY OF THE GAME BIRDS, WILD-FOWL AND SHORE BIRDS OF MASSACHUSETTS AND ADJACENT STATES, by EDWARD HOWE FORBUSH, State Ornithologist of Massachusetts. (Issued by the Massachusetts State Board of Agriculture.) 1912; 8 vo, pp. xvi+622, 36 pls., 26 figs.

Of great immediate, practical use in the swelling campaign against the extermination of American game animals, the book under notice deserves warmest commendation. Its purpose is admirably realized in the scientifically accurate tenor of treatment throughout, combined with the logical and convincing sequence of the subjects as presented.

Here we find just the information needed in regard to the history and in some cases direful fate of Atlantic Coast game birds, and from which lessons can be drawn as to how not to treat our Pacific Coast birds. It is too bad that it is impracticable to secure wide distribution in the west, of Mr. Forbush's work, because of the limited edition and local demands for it. If sportsmen and legislators could but acquire some of the knowledge therein made so clear, a long step would have been taken towards securing proper treatment of our game before it is too late.

It is not possible to adequately describe the book in its numerous useful details, in our limited space; but some of our readers may be interested to know that, as long as they last, copies can be purchased at bare cost price plus postage ($1.40 in all) by addressing the Secretary of the State Board of Agriculture, 136 State House, Boston, Mass.—J. GRINNELL.

THE PHYLOGENETIC VALUE OF COLOR CHARACTERS IN BIRDS. BY WITMER STONE, A. M. (Journ. Acad. Nat. Sci. Phila., 2nd ser., XV, Dec. 4, 1912, pp. 313-319, pl. 27).

This brief paper is a *multum in parvo* of first-grade philosophic ornithology. We have of late heard a great deal about the meaning of coloration. Mr. Stone recalls the reader's attention from the various concealing and direct-action-of-environment theories, and invites him to consider some facts more easily explained upon grounds of directive or phylogenetic significance.

Whole groups—genera and even families—of birds possess certain color patterns which occur but slightly modified throughout their members. Other features come and go, but a certain color pattern may persist, to no apparent adaptive purpose. Such a feature surely does show community of descent as much as, and in certain cases, more than does position of nostril or proportions of mandibles.

Attention is called to the over-emphasis often given such "structural" characters as compared with color features, this undue emphasis to be observed in parts of our modern schemes of classification. In some cases it is shown that color features prove more dependable taxonomically than the structural characters currently recognized. But the author refrains in this paper from any specific attempt at revising classification.

Mr. Stone shows convincingly that an extremely promising line of investigation awaits the student who will make a special study of the colors and color-patterns of birds, with problems of genetic relationship in view. The reviewer is not, however, quite ready to agree with Mr. Stone that there is more need of search in the direction of resemblances than in that of minute differences. *Both* are of great value, and equally important, though not necessarily of the same sort of meaning. The well-balanced student will neglect neither.—J. GRINNELL.

THE EXPERIMENTAL METHOD OF TESTING THE EFFICIENCY OF WARNING AND CRYPTIC COLORATION IN PROTECTING ANIMALS FROM THEIR ENEMIES. By W. L. MCATEE (Proc. Acad. Nat. Sci. Phila., LXIV, September 6, 1912, pp. 281-364).

This work, reviewing critically the literature of such experimentation, is indispensable to students of protective coloration. The main point emphasized, backed up by abundant evidence, is the danger of drawing conclusions from experiments upon animals in captivity, unless the results are carefully compared with what is known about the habits of the same animals under natural conditions. The evidence seems conclusive that animals in captivity do not re-act to the stimu-

lus of food as they do in a wild state. Hence the fact that a given animal is indifferent to, or even rejects, a certain species of insect when in captivity, by no means indicates that it would be indifferent to or reject the same species under natural conditions. Indeed, it has been definitely shown that many "disregarded" and "rejected" species are actually taken by wild animals of the same species as those experimented upon.

The whole doctrine of warning colors and mimicry is built upon the presumption that the species mimicked is disagreeable or dangerous, and hence under the law of natural selection the mimicking species has come to assume the same colors as the one mimicked; this presumption is in many cases unsupported by any evidence, and in many other cases is quite contrary to the known facts. Dr. McAtee's conclusion is that since acceptance or rejection of food in captivity bears no close relation to food preferences under natural conditions, the value of experiments upon captive animals to determine the efficiency of warning colors and other protective adaptations in their insect food is very questionable. It should be checked up with such definite knowledge of the natural food as is obtained by the examination of contents of stomachs or other portions of the alimentary canals. He clearly shows that many species which have been considered to be protected by noxious secretions or other adaptations are not really so protected, a conclusion supported not only by the definite evidence produced by Dr. McAtee, but also by the fact that if such species were not preyed upon by various enemies they would soon people the whole earth. Whether the reader finally agrees with Dr. McAtee or not, he will find in this timely paper much information and food for thought, and by having read it will be better prepared for intelligent consideration of the subject. By no means the least valuable feature of it is the series of bibliographies occurring at intervals under the proper sub-headings.—JUNIUS HENDERSON.

CONTRIBUTIONS TO AVIAN PALAEONTOLOGY FROM THE PACIFIC COAST OF NORTH AMERICA. By LOYE HOLMES MILLER (Univ. Calif. Publ. Geol., vol. 7, no. 5, October 12, 1912, pp. 61-115).

The present paper is a detailed summary of our knowledge to date of the fossil birds of the Pacific coast. The accompanying bibliography shows that there have been published eleven separate papers relating to this field of ornithology. By far the most important of these are obviously those of Miller himself who has been fortunate in having full access to the rich material accumulated under the direction of Dr. J. C. Merriam in the department of palaeontology of the University of California.

Of the eight localities on the Pacific slope, in which fossil birds have been found, six are in California. The most notable of these localities, the now famous Rancho la Brea, near Los Angeles, has produced no less than forty-nine species of birds, with promise of further discoveries as excavations there are continued in the future.

Miller's present contribution includes an account of each of the fossil faunas, with lists of the species known from each. Past distribution as thus shown in the regions concerned is compared with present day conditions. Various lines of evidence point towards a Pleistocene climate of higher temperature and greater humidity than now.

The Pleistocene avifauna contained several types of birds not now found north of South America. There appears to have been a retraction in the ranges of these types to the southward. There were many more species of eagles and vultures in California in Pleistocene times than now.

Among causes of the extinction of raptorial species Miller considers as of probable importance, the disappearance of forests and luxuriant meadow vegetation, and the great reduction in the population of herbivorous mammals. J. C. Merriam's studies indicate the disappearance of many species of carnivorous mammals at about the same time with the raptorial birds now extinct. Dr. Miller believes the coincidence significant of dependence of the scavenging birds upon the beasts of prey, in that the former fed largely upon the discarded kills of the latter.—J. GRINNELL.

AN INVESTIGATION CONCERNING THE FOOD OF CERTAIN BIRDS. By JOHN HAMMOND, B. A. (Journal of Agricultural Science [Cambridge], June, 1912, 4, pp. 380-409).

As a further contribution to a knowledge of the food of the birds of England has come a paper entitled "An investigation concerning the food of certain birds" by John Hammond. This paper gives some of the results of an investigation instituted by Professor Wood and Mr. Warburton of the School of Agriculture, Cambridge, "to determine whether or not certain birds were harmful to agriculture." The method adopted in the investigation was "the examination of stomach contents, together with a collection of field notes concerning each bird."

In beginning the investigation the following points were taken into consideration:

"(1) That the examination of the stomach contents ought to be continued throughout the

year, as the conditions (harvest, seed-time ploughing, etc.) would vary considerably.

"(2) That the district from which the birds to be investigated come should be extensive but not too wide. If all were taken from a small area, local conditions would be too prominent; whereas, if birds were obtained from the whole of Great Britain, the variations in climate (and consequently in dates of seeding and harvest) would prevent a clear idea being obtained of the changes in the food materials that occurred from month to month.

"(3) That field notes ought to be taken when the birds were killed, the following facts being mentioned: (a) name and address of sender, (b) date and time of day, (c) exact locality in which the bird was killed, (d) weather, on account of its influence on insect life, (e) special notes, if the bird was doing any particular injury."

A distinct advance in method over previous work can be seen in the attempt to determine the food for the whole year by making collections of birds in the same general locality each month of the year. Although birds were collected where found feeding, attention is given the character of the place where the bird was collected, thus emphasizing the availability of certain kinds of food.

The food of the starling (*Sturnus vulgaris*) and of the lark (*Alauda arvensis*) is given in detail. The final verdict as to the economic value of the starling is as follows:

"(1) The starling is very beneficial during the late spring, summer and early autumn months, eating many harmful insects although a number of beneficial ones are also destroyed.

"(2) During the autumn, and to a less extent in the spring, much harm is done by the consumption of seed corn (particularly wheat); many harmful insects, however, are also destroyed during this period.

"(3) Owing to the fact of the bird's autumn and spring migrations, the remedies suggested are, either (i) to dress the seed corn with something that renders it distasteful to birds; or (ii), if suggestion (i) cannot be carried out successfully, to kill off the autumn migrants in large numbers."

The following conclusion is reached in regard to the lark: "On the whole the lark is beneficial; but, owing to the injuries done at certain times of the year, there is no reason why it should be specially protected, although its wholesale slaughter is to be deprecated."

A table showing the results of the stomach examination of various other birds, which were obtained in insufficient number "for an opinion to be expressed as to their utility," is added. A "List of References" gives a number of the important European publications on the food of birds.

In this paper there appear several original ways of tabulating results. One table gives the number of birds collected each month and the exact locality in which they were collected. A second table gives the date, time, place, locality, weather and sex, and tabulates the different kinds of food under the headings injuries, benefits, and neutral. A third tabulation groups seeds, vegetation, etc., insects, etc., and miscellaneous food under these same headings giving the "times occurred" and "number occurred." The material grouped in this way has been mounted on cardboard. To the student, but perhaps to a less extent to the farmer, this method presents vividly the economic aspect of each meal. As a method of preserving the material permanently, it has disadvantages as compared with the "vial" method.

A fourth table presents data from the standpoint of the food articles. It gives the percentage of times each article of food has been taken by the birds examined. A description of the food taken each month brings out clearly the change in food-habits from one part of the year to another and so emphasizes the necessity of a study of the bird's food the year through.

Perhaps the greatest criticism that can be offered is that against the use of the numerical method. To say that five out of twenty birds, or 25 per cent, ate carabid beetles hardly gives us a clear knowledge of the relation of this particular diet to the whole food or the bird's relative taste for carabid beetles. The percentage-by-bulk method used by the U. S. Biological Survey comes nearer showing the relative importance of the food elements. The value of the numerical method as a guide to the actual destruction acomplished, however, is self evident. A combination of both methods doubtless comes nearest the common aim —"interpretation of economic values."—H. C. BRYANT.

BIRDS IN RELATION TO A GRASSHOPPER OUTBREAK IN CALIFORNIA. By HAROLD C. BRYANT (Univ. Calif. Publ. Zool., XI, November 1, 1912, pp. 1-20).

In July, 1912, a plague of grasshoppers was reported from the vicinity of Los Banos, Merced County, California. The author visited the locality and spent a week there in studying the possible bearing of the native bird-life upon the insects. The present paper is occupied with an account of the observed facts, together with some general remarks upon the relation of birds to insect outbreaks.

It was found that at least fourteen species

of birds were feeding extensively upon grasshoppers. Taking into account numbers of individuals as well as destructive capacity of each species, the relative importance of the five ablest destroyers was as follows: (1) Bicolored Blackbird, (2) Western Meadowlark, (3) Killdeer, (4) Bullock Oriole, and (5) California Shrike.

It is shown that with abnormal increase of such an insect as the grasshopper, many birds appropriate this food source for the time being, and at once factor in checking the outbreak. The principle is emphasized that birds turn to the sort of food most readily available. While figures are given which show conclusively that the birds of the region could not have controlled the plague after once well under way, the author reasons by inference that many incipient insect outbreaks may be checked by birds at the outset, so that they never reach a point where great damage results. In the Los Banos outbreak, the insects had become so abundant locally that the birds when under observation made no noticeable headway against the pests from day to day; but it was possible to figure the value of the birds in hastening the end of the insect raid, and even in lessening the amount of aggregate damage sustained at the time.

Mr. Bryant's paper is commendable in its accurate detail of fact. More particularly is it admirable in the calm and judicious mode of drawing inductions. There is no discordant note of sentimentality to mar the paper as a scientific contribution.—J. GRINNELL.

A REVISION OF THE FORMS OF THE GREAT BLUE HERON (ARDEA HERODIAS LINNAEUS). By HARRY C. OBERHOLSER (Proc. U. S. Nat. Mus., vol. 43, December 12, 1912, pp. 531-559).

In this treatment of the Great Blue Heron ten geographical races are recognized, four of them being first described here. Descriptions, critical comments, and other details of the work are presented with all the painstaking care and accuracy characterizing previous contributions of the author, whose series of studies of various difficult groups forms such a valuable portion of the ornithological literature of recent years.

The paper under consideration is of especial interest to California ornithologists, in that two of the new subspecies described are from this state. *Ardea herodias hyperonca*, type locality Baird, California, is the name applied to the form inhabiting California in general, excepting the southeastern desert region and the Santa Barbara Islands. *Hyperonca* is distinguished from the Eastern *A. h. herodias* by its greater size alone, being exactly similar in color; as the much paler colored *treganzai* occupies the desert and Great Basin regions intervening between the habitats of *hyperonca* and *herodias*, it is quite logical to recognize in nomenclature the differences between the two latter forms.

As much cannot be said of the island subspecies described. The characterization of *Ardea herodias oligista* is based upon a single immature bird from San Clemente Island, and such sweeping generalizations are made from the weak basis afforded by this one specimen that it almost appears that the author is giving expression to a preconceived belief that there *should* be a separate island subspecies, rather than to a dispassionate exposition of what his material actually reveals.

The only difference claimed for the island race is its smaller size. Coloration is declared to be the same as in the mainland form *hyperonca*. The one specimen available, though admittedly an immature bird, is said to be "evidently full grown". From the date of capture, August 26, this may, perhaps, be questioned. At any rate it is unfortunate that the only character ascribed to the race is one that might be explained by the immaturity of the single specimen examined. The subspecies described upon the strength of this one young bird from San Clemente Island is given a range including "Santa Cruz, San Nicolas, Anacapa, Santa Catalina, and probably other islands of the group", although certain of these islands have as little in common with one another as they have with the mainland.

We are also told that "this race is probably confined to the Santa Barbara Islands, as the species is said to be resident there". Just what grounds there are for the latter assertion is not apparent, and it is doubtful if the statement could be proved. The islands are such a short distance from the mainland that the intervening channels can be but inconsiderable barriers to a strong flying bird like the Great Blue Heron. In the present paper (page 536) we are told of a specimen of *A. h. herodias* taken at sea about 130 miles off the coast of New Jersey! Furthermore, a favorite feeding ground of the herons about the islands is on the extensive beds of floating kelp, which support the birds easily, and form convenient resting places at short intervals, should any such be required.

Altogether, even conceding the possibility of the existence of a race of *Ardea herodias* confined to the Santa Barbara Islands, we cannot admit it to be proved, nor even demonstrated to be reasonably probable, in the paper under discussion, while there are many facts that argue against it.

The description of the subspecies *oligista* seems ill considered, and is an undoubted blemish in what appears to be in other respects an excellent piece of work. It would

have been quite sufficient to have pointed out the peculiarities of the specimen at hand, and left to future workers the task of determining their meaning.—H. S. SWARTH.

MINUTES OF COOPER CLUB MEETINGS

SOUTHERN DIVISION

OCTOBER.—The October meeting of the Southern Division of the Cooper Ornithological Club was held on October 28, 1912, at the residence of Dr. Loye Holmes Miller, 6066 Hayes Avenue, Highland Park, California. On motion duly made and seconded, Mr. Daggett was elected Temporary Chairman.

The following members were present:—Mrs. Harmon and Messrs. Chambers, Daggett, Layne, Howell, Miller, Myers, Rich, Tracy, van Rossem, Willett, Zahn and Law; and, as visitors, Mrs. Loye Holmes Miller, Mrs. Tracy, and the Misses Van Deusen.

The minutes of the September meeting were read and approved. Upon motion by Dr. Rich, seconded by Mr. Willett and duly carried, the Secretary was instructed to cast the unanimous ballot of those present electing to active membership, Messrs. Alfred Cookman, Wilson P. Gee, Forrest S. Hanford, Hans Hochbaum, Morris Johnson, Pierre E. Letchworth, Jr., John N. Loshinski, and E. W. Merrill, proposed at the last meeting.

Applications for membership were presented as follows: Albert L. Barrows, 1430 Arch St., Berkeley, Calif., proposed by H. C. Bryant; James H. Gaut, 219 Chamber of Commerce Bldg., Pasadena, Calif., proposed by A. B. Howell; Hilda Wood Grinnell, 2543 Durant Ave., Berkeley, Calif., proposed by J. Grinnell; J. Gregg Layne, 128 S. Normandie Ave., Los Angeles, Calif., proposed by J. E. Law; W. A. Squires, 1137 E. Miner Ave., Stockton, Calif., proposed by W. Lee Chambers; Edward Wall, San Bernardino, Calif., proposed by A. B. Howell.

The Secretary read an answer from the Northern Division, to our letter of inquiry in regard to the expense of the California Associated Societies for the Conservation of Wild Life, which was referred to the appropriate Committee.

The Secretary then read the finding of the Committee appointed to investigate the charges against Pingree I. Osburn, with the recommendation that he be expelled from the Club. Upon motion by Mr. Zahn, seconded by Mr. Miller and duly carried, the report of the Committee was accepted, and the Secretary instructed to notify Mr. Osburn of the charges and that he would be given an opportunity at the next meeting to refute same.

The Secretary then read J. Grinnell's paper on the Band-tailed Pigeon which excited much interest.

After adjournment those present partook of refreshments and hob-nobbed about Mr. Miller's beautiful Arroyo Seco home. Mr. Miller has built his home on the very brink of the great Arroyo Seco so that he can look down on the tops of the highest sycamores within a stone's throw. It is an ideal spot in which to study birds.—J. E. LAW, *Secretary.*

NOVEMBER.—The November meeting of the Southern Division of the Cooper Ornithological Club was held on November 27, 1912, at the Museum of History, Science and Art, Los Angeles. On motion duly made and seconded, Mr. Willet was elected temporary Chairman.

The following members were present: Messrs. Chambers, Daggett, Howell, Kimball, Layne, Linton, Rich, Robertson, Willett, Zahn, Law.

The minutes of the October meeting were read and approved. Upon motion by Mr. Robertson, seconded by Mr. Rich and duly carried, the Secretary was instructed to cast the unanimous ballot of those present electing to active membership, Messrs. Albert L. Barrows, James H. Gaut, J. Gregg Layne, W. A. Squires and Edward Wall, and Mrs. Hilda Wood Grinnell.

Applications for membership were presented as follows: Mrs. Eugene Overton, 651 W. 23rd St., Los Angeles, Calif., proposed by George Willett; Mrs. Edwin H. Husler, 434 W. 20th St., Los Angeles, Calif., proposed by George Willett; Mrs. F. B. Bicknell, 419 N. Broadway, Los Angeles, Calif., proposed by F. S. Daggett; W. B. Bell, Agricultural College, North Dakota, proposed by Vernon Bailey; Frank C. Clarke, 218 East Hall, University of Calif., Berkeley, Calif., proposed by H. C. Bryant; Alf. Eastgate, Tolna, N. Dak., proposed by Vernon Bailey; Joseph A. Sweeney, Reville, N. Y., proposed by W. Lee Chambers.

Upon motion duly made and unanimously carried, the report of the Committee appointed to investigate the charges against Mr. Pingree I. Osburn, was accepted and ordered filed. Mr. Osburn was ordered expelled from the Club and his name stricken from the rolls.

A letter from Mr. Frank Stephens, thanking the Club for making him an honorary member was read.

Upon motion made by Mr. Robertson and seconded by Dr. Rich, and duly carried, the action of the Northern Division in regard to the Pacific Association of Scientific Societies as to annual meeting and other matters, was approved.

The Secretary then read three notes by Dr. L. H. Miller on recent taking of Bendire Thrasher, Rocky Mountain Pigmy Owl and Alaska Hermit Thrush in the vicinity of his South Pasadena home. Adjourned.—J. E. LAW, *Secretary.*

NORTHERN DIVISION

NOVEMBER.—The regular monthly meeting of the Northern Division was held at the Museum of Vertebrate Zoology, Saturday evening, November 16, with President Coggins in the chair, and the following members present: Messrs. Bryant, Carriger, Coggins, Chandler, Grinnell, Heinemann, Lamb, Joseph Mailliard, Shelton, Stone, Smith, Swarth, and Taylor. Mrs. Grinnell, Mrs. Taylor and Mrs. Swarth were present as visitors.

The minutes of October meeting were read and approved, followed by the reading of the Southern Division minutes for October. New members were elected as follows: Hilda Wood Grinnell, A. L. Barrows, H. Hochbaum, A. Cookman, P. E. Letchworth, Jr., E. W. Merrill, and W. A. Squires. New names presented for membership were: J. A. Sweeney, Reville, New York, proposed by W. Lee Chambers; J. H. Gaut, Pasadena, and E. Wall, San Bernardino, proposed by A. B. Howell, and J. G. Layne, Los Angeles, proposed by J. E. Law.

A communication was read from the secretary of the Pacific Association of Scientific Societies, requesting information as to the date and locality preferred by the Cooper Club for the next meeting of the Association, to be held during the spring of 1913. Berkeley had been suggested as a desirable place for the meeting, and various dates in March and April, as the time. Berkeley was acceptable to the Club as the place for the meeting, and after some discussion it was decided that any of the dates in April (4th and 5th, 11th and 12th, or 18th and 19th) would be satisfactory, and the secretary was instructed to notify the secretary of the Association accordingly.

A letter from Mr. Frank Stephens was then read, expressing his appreciation of the action of the Club in electing him to honorary membership. The next order of business was the reading of the report of the committee appointed by the Southern Division to investigate the charges brought against Pingree I. Osburn, and on which the Southern Division based its action expelling Osburn from the Club. It was decided that the Southern Division was fully justified in pursuing the course followed, and the expulsion of this member was accordingly approved.

Mr. W. P. Taylor, chairman of the conservation committee, reported upon the organization meeting of the California Associated Societies for the Conservation of Wild Life. The actions of the committee, as outlined by Mr. Taylor, were fully ratified by the Club.

Business matters being disposed of, Mr. Mailliard, the first speaker on the program, opened a "discussion of oology", which was warmly taken up by several members present.

Mr. Taylor followed with a review of W. L. McAtee's paper on "The Experimental Method of Testing the Efficiency of Warning and Cryptic Coloration in Protecting Animals from their Enemies", this talk being largely in rebuttal of Mr. E. W. Gifford's arguments in favor of experimental work, as given in the last (October) meeting of the Division. Adjourned.—H. S. SWARTH, *Secretary.*

DECEMBER.—The monthly meeting of the Northern Division was held at the Museum of Vertebrate Zoology, Saturday evening, December 21, with vice-president Carriger in the chair and the following members present: Mrs. H. W. Grinnell, and Messrs. Bryant, Carriger, Grinnell, Heinemann, Miller, Ray, Storer, Swarth, and Taylor. Mrs. Taylor attended as a visitor.

The minutes of the November meeting were read and approved. The following were elected to membership in the club: J. A. Sweeney, Reville, New York, J. H. Gaut, Pasadena, E. Wall, San Bernardino, and J. G. Layne, Los Angeles. New names were proposed as follows: O. P. Silliman, Castroville, California, presented by W. Lee Chambers, and M. B. Rice, Cascadia, Oregon, presented by W. L. Finley. The resignation of E. W. Gifford was read and accepted.

Several matters of club business were then discussed and disposed of as follows: The secretary was instructed to send to the business manager the accumulation of Northern Division correspondence and other papers, which could thus be given more secure storage, together with the other club documents. The time of the Northern Division meeting was changed from the third Saturday to the third Thursday of each month.

The nominations of officers for 1913 gave the following results: President, H. W. Carriger; Vice-president, H. C. Bryant; Secretary, H. S. Swarth.

Two papers were presented. T. I. Storer reviewed Headley's recent book on "The Flight of Birds", and H. C. Bryant gave briefly some of the results of his investigation into the food habits of the Western Meadowlark. Adjourned.—H. S. SWARTH, *Secretary.*

For Sale, Exchange and Want Column.—In this space members of the Cooper Club are allowed one notice in each issue free of charge. Books and magazines can be offered for sale or exchange; bird skins and eggs can be offered in exchange, but *not for sale*. Notices must be written plainly, on one side only of a clean sheet of paper. For this department address W. LEE CHAMBERS, *Eagle Rock, Los Angeles County, California.*

WANTED.—Nidiologist, vol. I, no. 1, 2, 4, 5, 6, 8, 10, 11; vol. II, no. 2, 8, 11; vol. III, no. 1; vol. IV, no. 9; Osprey, new series, vol. I, no. 4, 5. O. WIDMANN, *5105 Von Versen Ave., St. Louis, Mo.*

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